

MAC-100  
CONNECTION

# PORTABLE 100

SEPTEMBER

1984

\$2.95

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**SWEEPSTAKES ISSUE  
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ON PAGES 66 - 67**



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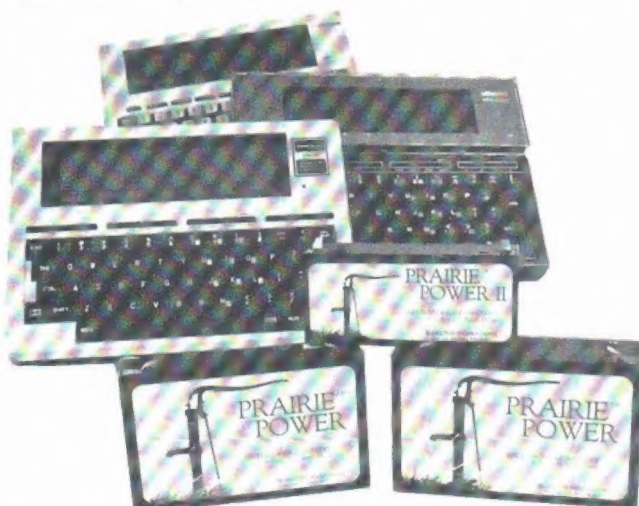
Whether you're writing your novel in the hills of Texas, your memoirs while sailing to Antiqua or just plain tired of spending time under your desk looking for outlets, PRAIRIE POWER batteries make "Briefcase Computing" a reality.

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5.5 amp. hr.	100 hrs. "	2.7 lbs.	6x3.7x1.3
2.6 amp. hr.	54 hrs. "	1.4 lbs.	6x2.3x1.3



Left to Right: Prairie Power 5.5, 2.6, 8.  
Front to Back: Tandy Model 100, Olivetti M10, NEC 8201A.

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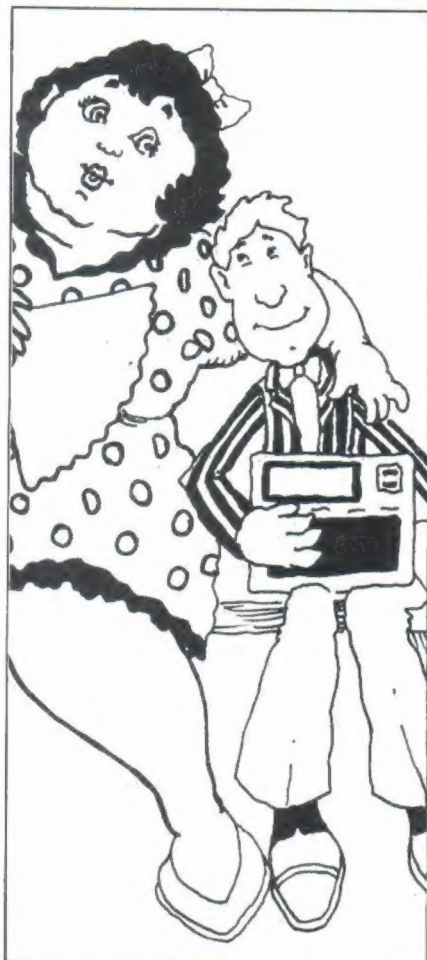
Phone \_\_\_\_\_ Address \_\_\_\_\_

City \_\_\_\_\_ St \_\_\_\_\_ Zip \_\_\_\_\_

\_\_\_ VISA \_\_\_ MC # \_\_\_\_\_ Exp. Date \_\_\_\_\_

Signature \_\_\_\_\_





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## FEATURES

### 32 FUNKEY STUFF — 3: TAPE, BACKUP, NAME, COPY, KILL By Jesse Bob Overholt

In this final episode, Jesse fills out RFU by adding tape backup, name, kill, and copy functions.

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Software savvy and cabling creativity make the 100-to-Mac connection.

# PORTABLE 100

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# EVERY DISK/VIDEO INTERFACE USER NEEDS THIS PROGRAM.

*DISK-BUDDY manages your disk files with one keystroke!*

The DISK-BUDDY menu is like the M100 command menu except it works on disk files instead of RAM files.

Just position the cursor over the file of your choice and press the function key. It takes one keystroke to:

- Display a disk directory of either drive
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- Run a program directly from disk

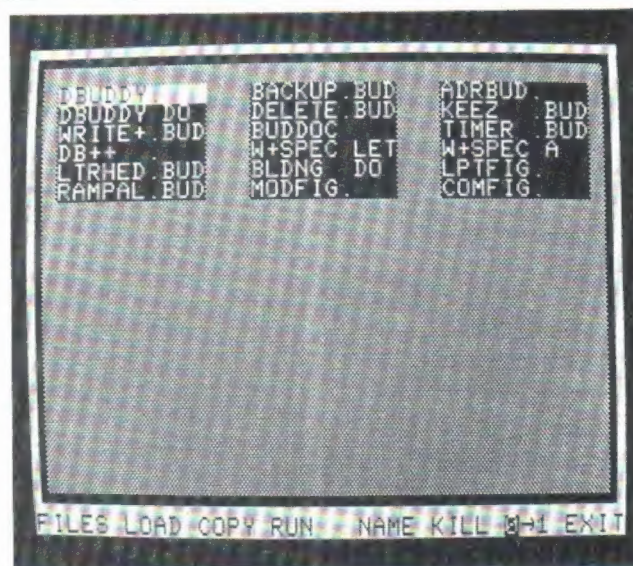
With two keystrokes:

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DISK-BUDDY unlocks the power of the M100 operating system. Commands for computer and peripherals, stored on disk, can be sent at the touch of a button.

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*A typical Disk-Buddy Menu.  
Note the function key labels on the command line.*

## DISK-BUDDY IS A SOFTWARE BUNDLE!

Our package contains several programs, powerful utilities which could be sold separately.

RAM-Pal has many of the same powerful functions as DISK-BUDDY but manages RAM files.

Memory low? ADR.BUD dumps your current ADRS.DO and NOTE.DO files to disk, and optionally deletes them from RAM, with one key stroke, of course. Later, load and save them from the DISK-BUDDY menu; one key stroke each.

DISK-BUDDY works great with programs that use "spec" files and templates. Just keep your favorite models stored on disk. A key touch loads and saves it to RAM, another touch gets you into your application. Changing formats is just as simple: load the new template with a single keystroke.

DISK-BUDDY AND THE DISK-BUDDY BUNDLE, INCLUDING RAM-Pal, ADR.BUD, TIMER.BUD and other demonstration programs are shipped on disk with full instructions, plus information on interfacing your own programs with DISK-BUDDY. Turn your M100 into a powerful, friendly desk top system! Tips for driving your M100 are included.

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☐ 8K ☐ 24K ☐ 32K System

☐  ☐ 

Account # \_\_\_\_\_

Signature \_\_\_\_\_

Exp. Date \_\_\_\_\_

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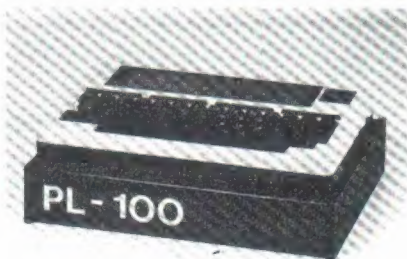
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\$498 includes:

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- Combination I/O board with
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  - 4 Channel 8 Bit Analog Output
  - 4 Analog Level Sense Inputs
  - 16 Bits Digital Output
  - 16 Bits Digital Input
- Battery Charger / AC Adapter
- 2 Empty expansion slots

- Uses rechargeable batteries and provides power to the Model 100
- Expansion boards available:
  - High Accuracy 12 Bit Analog I/O
  - 16 Bit Digital I/O
  - Combination Analog & Digital I/O

## ELEXOR ASSOCIATES

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# PORTABLE 100

The magazine for  
Model 100 users

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# PREVIEW

JOHN P. MELLO JR.



**W**ith the publishing of this issue, *Portable 100* is one year old. We're sure many magazines have had smoother infancies, but in these rocky times (where every pundit, publishing and otherwise, is playing taps for new computer magazines before they hit the newsstands), we're proud of what we've done in the past year and pledge to be even better in the year to come.

What's happened to *Portable 100* in its first year?

We went through one change of ownership. Originally part of Computer Publishing Inc., a division of New England Publications and former publisher of *Color Computer Magazine*, *Portable 100* became the flagship of Computer Communications Inc., a company founded by James S. Povec, former publisher at NEP. This was a risky move by Jim, given the economics of small publishing, but his enthusiasm for the Model 100 and commitment to portable computing was unflagging. Without Jim, there would be no *Portable 100* today.

And there would be no *Portable 100* without our readers. You've had to endure buggy program listings, double mailings of the same issues, delayed mailings due to a change in printers, and issues sucked into the void when their labels fell off. Most of you recognized the difficulties, but exercised the patience of Confucius with us. We can't thank you enough for that.

What do we see happening in *Portable 100*'s second year?

For one thing, we hope none of the problems we were plagued with in our first year. For another thing, we hope to broaden our coverage of the Model 100's sister machines, the Olivetti M10 and NEC 8201. More and more NEC owners are writing to us (although we haven't received any manuscripts dealing with the 8201), more advertisers are producing software for both the NEC and 100, and we've broadened the Model 100 Special Interest Group on CompuServe to cover the NEC machine.

We will also start publishing listings in bar code. Up to now, the major problem with publishing bar-code listings has been the quality of the final product. Reproduction of dot-matrix bar code can be done (*Professional Computing Magazine*, in a pioneering effort, has done it), but there can be quality-control problems.

When Radio Shack's special bar code, Tandy Code, is introduced a typesetting interface will be available allowing us to typeset our bar code listings. This will be a vast improvement over dot-matrix listings. In the interim, however, we will be using software written for us by Michael Stanford of the Portable Computer Support Group, to translate Basic programs into bar code.

One thing we will not do in the coming year is broaden the scope of the magazine to cover the Model 2000.

**SWEEPSTAKES.** Another group without which *Portable 100* could not have survived is our advertisers. No one has to tell those guys about faith in the Model 100. They've had it from the start. And as if they hadn't already done plenty for the Model 100, they've rallied behind our big birthday kickoff: The *Portable 100* Sweepstakes.

The Sweepstakes is the brainchild of our affable advertising director Peter Montross. We're offering more than \$6000 in prizes. The lineup includes:

- A RadioShack Disk-Video Interface;
- Disk drives from the Portable Computer Support Group and Holmes Engineering;
- PG Design's 32K expansion RAM;
- Software from Traveling Software, Key Solutions, Skyline Marketing; and
- Much, much more!

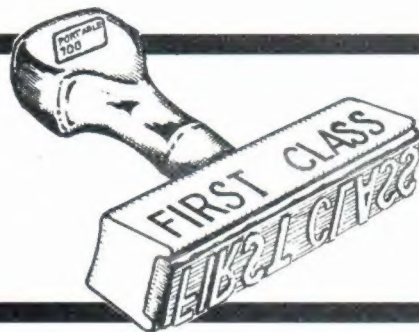
To read more about The Sweepstakes, see page 66 and 67.

**RFU AND MAC.** But don't forget about the rest of the issue. Jesse Bob Overholt (page 32) finishes his super utility program, RFU, adding features to automatically kill, name, copy, and backup files. And Danny Goodman (page 42) explains how to get the two most innovative computer products of the past year — the 100 and the Mac — talking to each other. ◀





# MAIL 100



*Editor's Note: In addition to letters from our readers, we also include in Mail.100 letters from CompuServe and The Source. Those message writers are identified by their CompuServe (CIS ID) and Source (STG ID) identification numbers.*

## READER OFFERS PRODUCT HELP

As a regular reader, I appreciate every issue, especially your reviews. One of your advertisers, PG Design Electronics, advertises a 32K CMOS expansion. I haven't been able to ascertain from them if the expansion fits in the existing case, if additional power is required, and if so, is it external and at what voltage. In other words, if I spend \$325, will it work and what will it look like when it's set up?

I now have my 100 in a case made by Kangaroo (a very nice product) and a battery pack of 4 C cells in the pouch inside the case. This makes a nice compact unit, an arrangement I'd rather not upset.

Fred W. Forrester  
Santa Barbara, CA

► The PG Design expansion fits in the ROM compartment under the 100. It operates on its own batteries.

—Eds.

For those of you who are unsure, I thought I'd tell you about my experience with PG Design Electronics. I took part in a group buy.

When the unit arrived, it didn't have the BATT.DO file and wouldn't hold a file for longer than a minute or two. I called PG on a Sunday night and received a great deal of assistance.

First, the batteries in the unit weren't fresh, but even after changing to new ones, the chip wouldn't hold a file. They sent me a new chip the next day, which works wonderfully. I can hon-

estly say I've no reservations about dealing with them.

The chip probably has a poor battery conductor, but their response was dramatic and prompt; I was impressed.

I recommend that if your unit arrives without the BATT.DO file, be cautious with your data. Consider removing the unit and checking the batteries. Then, enjoy.

Rick Davidson  
CIS ID 71646,1276

## FRIENDLY SKIES

I'm a private pilot who's in the air quite a bit. Add to that affiliation with American Medical Support Flight Team which puts me in the cockpit often on a moment's notice for a destination I've never flown to. This has caused me to find a wonderful use for the 100: computing flight plans using departure points, destination points, enroute points, miles per gallon fuel burned, and estimated times of arrival.

Everyone seems to have a program for his IBM PC, but how many times can one of those be put on your lap in a cockpit of a small plane? I don't think the 28K memory size is a problem as Loran C navigation systems used today have even less capacity.

All pilots in Oklahoma City are unbelievably encouraged by the 100 and its potential for in-flight application. They can't figure out why software hasn't been written yet. Even simple

stuff I've written has their eyes glazed over when I do fuel consumption problems.

If someone would write a program for the 100 and advertise it in aviation periodicals, he'd make a bundle. Just point them my way first!

(Incidentally, portable computers do not endanger commercial flights.)

J. Thomas Kilpatrick  
Oklahoma City, OK

## NO EQUAL TIME?

Your recent comments in Preview (*Portable 100*, May 1984, page 4) have me a bit concerned that your direction is misguided. I'm a NEC PC-8201A user and thought your advertisers were covering the NEC and 100 equally. The fact the magazine doesn't have the same perspective surprises me and tells me the value of *Portable 100* won't be as great to me as originally felt.

In addition to the faster Basic performance of the NEC over the 100, an important factor to me was the lower radio interference the NEC generates since I both fly and use amateur radio equipment.

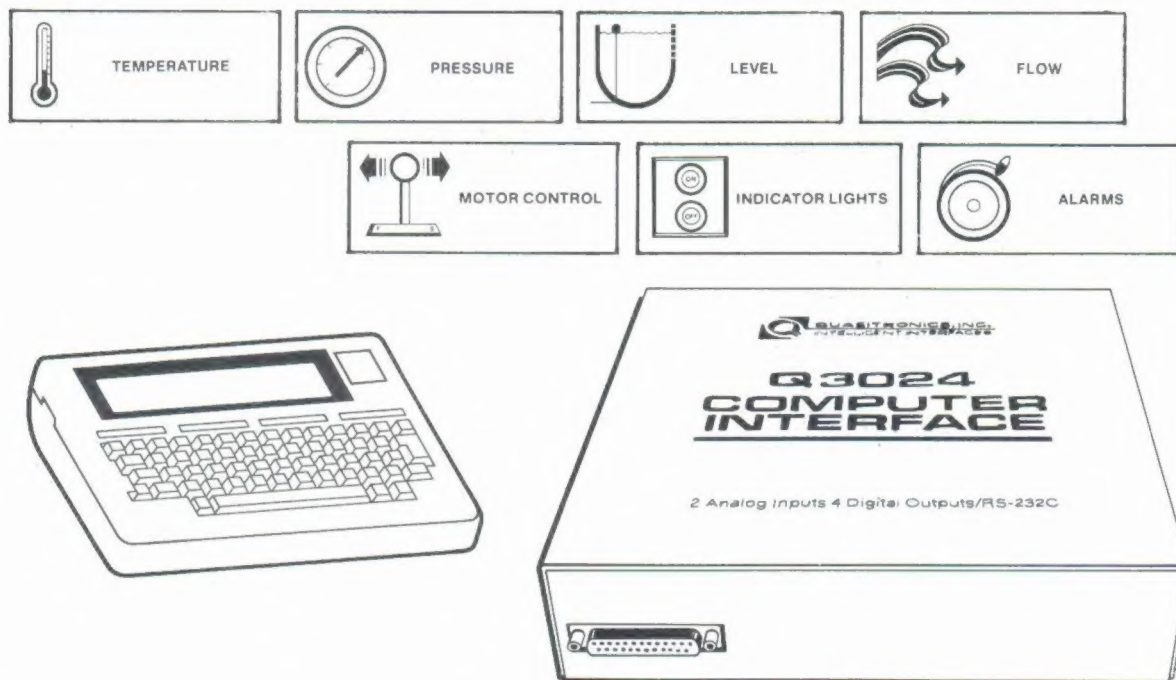
Please don't emphasize the 100 to the detriment of the coverage of other products. It deserves equal billing with the Model 100.

Scott Kostenbauder  
Poughquag, NY





# Make your Model 100 Grow... with the Q-3024 Interface from Quasitronics



For less than \$500\* you can add this proven interface unit and expand your Model 100's capabilities. Now you can use it for data collection and to control and actuate alarms, motors, pumps, heaters, laboratory apparatus and a host of other equipment. Hundreds of these quality interfaces have been in use for over a year with documented results.

## Take a good close look at this combination of performance benefits.

- Easy to connect to any computer with an RS232 serial port.
- Can be programmed through Model 100 in BASIC.
- Contains a Z-80 micro.
- Can store information on discs to permit long-term data logging (or it can print out).
- Provides 2 high resolution analog inputs; 4 digital outputs.
- Can rescale information into engineering units for your own programming.
- Can control up to 4 devices such as alarms and actuators.

- Sample software examples included on disc.
- Compact—only 8 $\frac{1}{2}$ " x 8 $\frac{1}{2}$ " x 2".

## And there's more!

Quasitronics has specialized in interfaces for over a decade. The Q-3024 is just the first in a new and complete line of state-of-the-art interfaces. It's ready now for immediate shipment from stock.

We'll be adding other interfaces soon. If you'd like to learn more about Quasitronics, the Q-3024, and our expanding line of interfaces, call Chuck Jones, collect, or write to the address below. Dealer inquiries are most welcome.

\*List price \$495.00 each (plus shipping). Quantity discounts available.



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## ROM CROSSWORDS

I was reading a message on CompuServe and agree the Hewlett Packard approach isn't my cup of tea either. I see two directions here: One down the path started by the 100; another which will lead back in the direction of very complicated software, operating systems, and all the trappings of desktop machines in notebook-sized computers. All the latter path will accomplish

is the ability to bring your confusion with you.

I see it as a terrible waste of ROM to stuff Lotus 1-2-3 into a lap-sized computer. What I see happening isn't good. Instead of trying to develop new software and new approaches, it looks like a lot of companies and software people will pat themselves on the back and congratulate themselves every time they shoehorn a disk-based monster into a portable. Looks to me as if we're at a crossroads.

Bob Covington  
CIS ID 71316,521

## NOT FOOLED BY APRIL

I just received my April issue of *Portable 100*. I'm afraid to say that your magazine is a joke, and Bill Walter's article on the "Ultimate Computer" was the straw that broke the camel's back.

B. Harney  
Frankfort, KY

## FOUR PLAUDITS

I've read every issue of *Portable 100* and I must say it's one of the best computer magazines on the market. It stands head and shoulders above any of the other smaller publications. I've even begun cataloging your articles for future reference.

The constant discussion in your letters column concerning whether you should write for the novice or the hardcore hacker amuses me. The argument seems silly since you're reaching a vast variety of people with your magazine. For me, I enjoy it all.

As for the comments in earlier issues concerning too much drivel: I have found Jake Commander's ramblings amusing, if not cynical . . . but you can't please everyone.

I look forward to every issue. Keep it up.

Lance Gilbert  
CIS ID 70536,1545

Some who write letters complain your magazine is either too technical or too primitive. I read it with interest and find something useful in every issue.

Ted C. Slack  
Miami, FL

After reading every issue of your magazine from cover-to-cover, I've decided you have a fantastic publication.

According to Mail.100, though, you seem to have a lot of dissatisfied subscribers. I see people complaining that the magazine is too junk-filled, too technical, and programs are too bug-ridden. It's too bad these people aren't satisfied that there's such a fine source of information available specifically for the 100.

I think adding a column on assembly language would be the best thing you

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could do. You could please both the beginning and advanced programmers.

Also, I've noticed several attacks on Jake Commander's lack of seriousness. His harmless sarcasm is welcome by many.

Paul W. Brunner  
New York, NY

I would like to thank everyone at your magazine who has helped me on my way in Basic. It'd be a long list, so to make it easier: Thank you *Portable 100* for creating the possibility for 100 owners to communicate.

A. Jorge Vismara  
Rio De Janeiro, Brazil

#### ADVERTISER TALKS BACK

I was pleased with the review of our income tax bookkeeping program, *Book (Portable 100, May 1984, page 62)*. I would, however, like to clarify a few points regarding comments made:

"The manual looks like a pirated copy but it's well-written and user friendly." The no-frills 12-page loose-leaf manual fits in a standard three-ring binder (not included). We endeavor to provide value in software, not fancy notebooks.

"I tried to run the programs before reading the instructions . . . and got an FF ERROR in 36 . . ." This only occurs when the program is run for the first time to start the initialization process by typing GOTO 20. This procedure is used to avoid any possibility of deleting the data files by accidentally initializing the program during operation.

"I played around with the program quite a while wondering how to access an individual account . . . there's nothing in the manual to tell you how to get into an account." The reviewer should have read the documentation before operating the program. There are instructions on pages one and seven telling you to push any key other than enter to access an account for posting.

The review was well-written and balanced. Reviewer Mary Jeann Batham did point out a good feature of the 100: Basic programs can be modified and run on other TRS-80 computers that share Microsoft Basic. Most of the changes are related to file specifications and screen displays.

Ray Hoskins, Manager  
Chattanooga Systems Associates  
Chattanooga, TN

#### FAR EAST ENTOURAGE

Not only has the 100 become standard equipment for traveling reporters, but on President Reagan's recent trip to China, it became an essential tool. Many reporters carried Brother EP-22 or EP-44 printers because it was known in advance that while the 100 would transmit to home offices during the pre-China stops (California, Hawaii, and Guam), it wouldn't work once in Beijing.

The press room was awash with 100s hooked to Brothers in order to print copy for Telex operators. (Chinese were said to be monitoring lines making phone transmission by 100s impossible.)

It was noted that EP-22 owners were extremely jealous of reporters with EP-44s because of copy quality and the fact the 22s had to be run at 75 baud, while the 44s could go at 110.

Bruce Drake  
CIS ID 71436,323

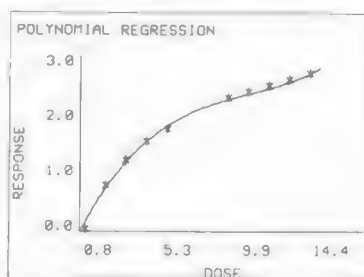
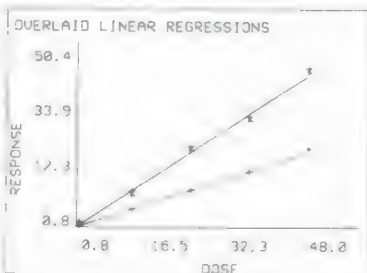
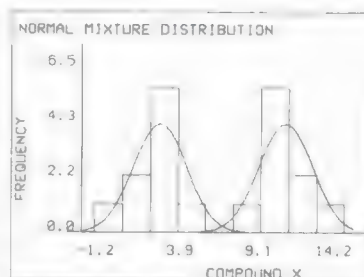
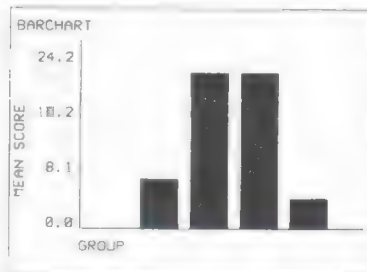
## The Portable Statistician

Software package to make your Radio Shack Model 100 and CGP115 color plotter into a portable statistics/graphics workstation.

#### Features:

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- t-statistics
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- Nonlinear regression
- Multiple regression
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- Mixture analysis
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- Linear plots
- Nonlinear plots
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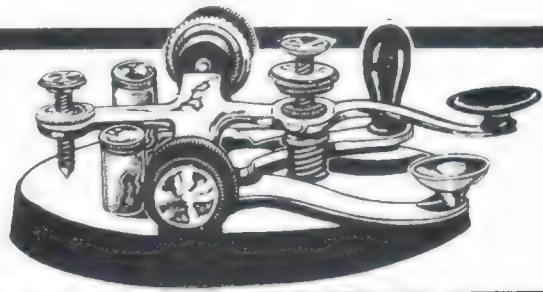
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# THE WIRE



## EPSON THROWS GAUNTLET

A serious challenge to the Model 100's dominance of the under \$1000 notebook computer market has been mounted by Epson America.

Epson officially introduced its PX-8 Geneva to the United States on June 29. The firm previously announced the machine in Europe at the Hanover Fair in West Germany in April.

Geneva is a Z-80-based machine with the CP/M 2.2 operating system, 64K of RAM, and 32K of ROM.

Its liquid crystal display is 8 lines by 80 characters. The display pops up to reveal a built-in microcassette recorder for data storage. While newer portables are using 16-line-by-80-character displays, Epson eschewed that trend for financial reasons.

The basic unit is priced at \$995.

Weighing four pounds and measuring 8.5 by 11.5 by 1.75 inches, the basic PX-8 is absent a built-in modem, video-interface, and parallel port.

Other features include an RS232C serial port, high-speed serial port (top speed 38,400 baud), speaker, analog-to-digital converter, clock-calendar, and recessed slide-out handle.

Epson said in the future, the analog-digital converter may be used to accommodate a mouse, joystick, or track ball.

The computer runs on rechargeable nickel-cadmium batteries good for 50 hours of uninterrupted operation.

ROM-based software for the unit includes a word-processor (Portable Wordstar), spreadsheet (Portable Calc), and time utility (Portable Scheduler). Epson said three more ROM programs will be available later this year: Sorcim's SuperCalc, Traveling Software's traveling Pak, and Ashton Tate's Super Base II.

Epson's also marketing an impressive array of peripherals with the PX-8:

- A battery-operated disk drive. The drive uses 3.5-inch disks with a storage capacity of 320K and is in a casing 8.25 by 4.75 by 2 inches. It operates at 4800 baud and costs \$599.
- An expansion unit that snaps on to the bottom of the Geneva. This "multi-unit" contains a 300-baud modem, 64K RAM disk, and Centronics parallel-printer port. The modem features automatic answering and dialing for pulse and touch-tone systems. Suggested retail price for the multi-unit is \$360.
- Solid-state, snap-on, RAM-disk units. A 60K unit sells for \$329 and a 120K unit for \$460.
- Portable thermal printer with 9-by-9 dot matrix. Measuring 2.5 by 4.5 by 11.5 inches, the printer is unidirectional and prints at 45 characters per second. It has three pica and three elite type styles (normal, enlarged, and condensed), provides range of 40 to 160 characters per line, and has 8-by-480 dots-per-line dot-addressable graphics. Containing serial and parallel interfaces, the printer is expected to retail for from \$250 to \$275.

Despite the introduction of the PX-8, Epson said it will continue to support its earlier lap model, the HX-20.

## NEW RADIO SHACK PRESIDENT

Bernard S. Appel, 52, Tandy's chief marketing executive, was appointed president of the Fort Worth corporation's Radio Shack division.

Appel, who has been with Tandy since 1959, became the firm's vice president for marketing after Jon Shirley left Tandy to become chief executive officer of Microsoft, a major producer of microcomputer software and a moving force behind the development of the Model 100 (see *Portable 100*, October 1983, page 14).

In a statement announcing Appel's promotion, John V. Roach, chairman of the board and chief executive officer of Tandy, said, "Bernie has been a major contributor to the incredible growth of Radio Shack during his career. His outstanding performance in merchandising and advertising combined with his strong synergy with customer and retail personnel uniquely prepare him for leadership of our U.S. operations."

The title president of Radio Shack has been dormant since Lewis Kornfeld vacated the post in 1980.



New Radio Shack President Bernard Appel



# Micro Demon brought you three sensational programs...

## Here's four more!

**1 ASM - A Powerful 8085 assembler.** ASM contains all the features you expect in an assembler as well as several features that are specific to the model 100. For instance, there is a built-in macro library that will simplify writing code. Among these macros are relative branch instructions for programs intended to be called from BASIC. ASM comes with extensive documentation, including lots of information on the ROM.

Example programs will help the novice get started with machine language programming. The perfect way to learn about machine language.

**2 TEL PRO - A TELCOM enhancement.** With TEL PRO you can remain connected to the phone line and still read the menu, kill files, read text files, upload BASIC programs (with .BA extension), download the screen, access the time, set an alarm, delete unwanted carriage returns from downloaded BASIC programs, and more. An excellent companion program for PRO AID.

**3 Questn - Artificial intelligence with a sense of humor.** Ask this program any question, and it will respond with a relevant, often humorous reply. Philosophical and personal questions are the best. A nice program to show off your computer. Requires at least 24K memory. Questn comes with a list of questions for those who have trouble thinking of something to ask.

**4 Napoleon - It's you against the computer.** In this card game from England, each player gets a bid and the high bidder tries to make his contract. The computer makes a worthy opponent. You can choose the computer's style of play.

Send mail orders and requests for information to Micro Demon, Inc., P.O. Box 50162, Columbia, SC 29250. Visa and Mastercard are welcome. Or, call our 24 hour order line, 803-733-0980.

### PRO AID, DASM & Music

**PRO AID** - Still our number one product. PRO AID is a machine language program that adds many powerful features to your model 100. You get 26 new, easy to define, super function keys that can be used in TEXT and TELCOM as well as BASIC. You also get automatic line numbers, instantaneous deletion of any range of BASIC lines, a special calculator mode with new BASIC commands, immediate access to MENU programs, a program status key, and much more. PRO AID uses less than 1.8K of your memory, and can be located anywhere there is room. PRO AID comes with complete documentation.

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- |                                |                                |                               |
|--------------------------------|--------------------------------|-------------------------------|
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<sup>1</sup>May be superscript, numbers, letters or symbols.

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## TANDY SALES SLUMP

While preliminary sales for Tandy's fiscal year ending June 30 were ahead of its fiscal 1983 sales, the Texas enterprise met some setbacks in the first half of 1984.

According to a statement from Tandy, earnings during the second quarter of this year compared unfavorably with the same period in 1983.

Earnings for 1984's second quarter, Tandy said, would be from 60 to 75 cents, compared to 71 cents for the same period in 1983.

Consolidated sales for June 1984 amounted to \$201 million, a 1 percent decrease from June 1983's \$203 million. Tandy also said June sales in its Radio Shack stores were down 5 percent from 1983.

However, for the entire fiscal year Tandy reported sales of \$2.7 billion, 11 percent higher than the \$2.4 billion reported in its 1983 fiscal year.

Commenting on the disappointing sales figures, Tandy's chairman and chief executive officer, John V. Roach, said in a statement, "Product shortages, due to shifts in product mix and component availability, have been a major factor impacting both our traditional and computer businesses.

"Additionally, rapid changes in product pricing in the microcomputer industry is affecting sales and heightening the competitive environment in that segment of the business.

"Clearly product cycles are normally more important to Tandy than economic cycles. Some of the current sales slowdown can be attributed to these cycles and we believe that new products and pricing for the fall season combined with a better in-stock position will enable us to achieve more traditional sales growth rates."

## IBM LAP, HP UPGRADE

Before the arrival of Jr., IBM name mongers tagged the machine with the moniker Peanut. Some observers have speculated an upgrade may be in the wings called Popcorn. Now speculators claim Big Blue has a lap portable ready called (what else?) Cracker Jack.

Reportedly, IBM has a contract with Hi-Comp, a bubble-memory board maker in Redmond, WA, to design 256K bubble-memory boards for Big Blue. Since the Redmond firm already produces bubble memory for the PC and XT, there's a chance the new boards are for a new micro. Whether the new machine will be a lapper remains to be seen.

It's also been reported 3.5-inch disk manufacturers are responding to a request for quotation from IBM for the micro drives. Speculators say the drives will be used in a new portable unit.

Meanwhile, Hewlett-Packard reportedly is preparing to upgrade its portable, the HP-110, by this fall by increasing its LCD size to 25 lines and adding a ROM slot. *Portable 100* reported last month HP also intends to upgrade one of its ROM-based programs, Lotus 1-2-3, with the latest Lotus offering, Symphony.

## PARALLEL SHAKEOUTS

John Gantz, *InfoWorld* columnist and editor of *Tech Street Journal*, a newsletter covering high-tech stocks, found parallels between the existing computer market and the one during the 1969-1970 shakeout of computer manufacturers.



## SUSIE SOFTWARE

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## MICRO-MATH 1 #MM1 \$15.00

Converts your computer into a convenient calculator with 7 programmable memories. Destined to become the most often used program on your portable computer.

## MICRO-LABEL #ML1 \$25.00

A deluxe list and label program. Data can be saved to both ram and/or cassette tape files. It allows up to 5 lines of data to be printed onto standard 3 1/2" x 7/8" labels and accepts a 6th non-printing data line for LCD display use. The program performs alphabetizing and searches for user assigned printing codes.

## MICRO-FILES #MF1 \$25.00

A powerful data management program that permits up to 25 files of 12 fields each to be resident in the computer at one time. Each file can consist of up to 900 characters. The program can alphabetize, search on all fields and produce hard copies at the touch of a key.

## MICRO-SALES #MS1 \$25.00

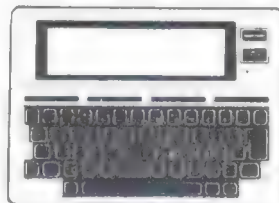
A point of sales and forms generation program in one! This program will generate personalized purchase orders, sales orders, receipts and invoices. All data can be saved to ram storage. The program is self formatting, eliminating the need for expensive pre-printed business forms, and since it can print consecutive copies, expensive multi-part forms are not needed either. The program even supports sales taxes and discounts and performs all math functions.

## MICRO-FLITE #MP1 \$28.00

A flight simulator game with multiple airports. Instrumentation consists of an altimeter, air-speed indicator, turn & bank indicator, compass and directional finder, DME, fuel gauge and indicators for flap and landing gear positions. A simple keyboard layout controls throttle, elevator, rudder/aileron, flap and gear controls.

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- RADIO SHACK MODEL 100
- NEC 8201-A
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- M-FLITE

ONLY \$89<sup>95</sup>

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ONLY \$58<sup>00</sup>



## SMALLTALK

- Transfer files to and from your IBM PC using a null modem cable
- Utilize the screen, printer and disks on your IBM PC
- Routinely archive your portable computer files to your IBM PC
- Specify TRS-80 M100 or NEC 8201A
- \$59.95 with null modem cable  
\$39.95 without null modem cable

## DIALTALK

- Transfer files to and from your IBM PC remotely over the telephone
- Utilize the screen, printer and disks on your IBM PC
- Routinely archive your portable computer files to your IBM PC
- IBM operates unattended with password access and event logging
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- \$ 59.95 (single user license)  
\$189.95 (5 user license)

## NEW FOR THE APPLE 2C

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- DIALTALK \$ 69.95 (single user license)  
\$199.95 (5 user license)

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Apple 2C is a trademark of Apple Computer



Gantz, in a column appearing in *Mass High Tech*, noted the earlier shakeout occurred 13 years after transistors began being used in computers and five years after IBM cracked the corporate computer market with its Model 360. Venture capital activity set a record in 1969 and one year later high-tech stocks plunged more than 60 percent. "Lots of companies went under, lots of people changed jobs, no more new magazines were started successfully" and trade show attendance dropped more than half, Gantz wrote.

What's happening in 1984, he asked, 13 years after microprocessors began being used in systems and five years after Tandy and Apple opened the personal computer market? Venture capital activity has been at its highest level since 1969 and personal computer stocks have dropped 60 percent. Lots of companies are going under, people are changing jobs, no new magazines are being started successfully, and trade show attendance is down.

## AND THE BEAT GOES ON

Gavilan Vice President for Communications Fred Hoar has been quoted as saying, "The microcomputer industry is entering a new chapter—Chapter 11," and for trade press watchers, his remark had painful meaning as these items illustrate:

- Software Arts, the creator of VisiCalc, laid off 67 people, more than half its workforce. As reason for the layoffs, the firm cited heavy expenses related to a lawsuit it's filed against VisiCorp over rights to marketing the popular spreadsheet program.
- Corvus Systems laid off 65 workers, 13 percent of its employees.
- Portable computer maker Gavilan laid off 75 employees, 25 percent of its workforce. According to the quotable Hoar, Gavilan is curtailing plans to get its portable into retail stores and concentrating on its backlog of orders from international and value-added customers.
- Convergent Technologies suspended manufacturing of its Workslate briefcase computer. Reportedly, the product is moving very slowly and the firm has 6,000 units in inventory.
- Franklin Computer, manufacturers of an Apple knockoff, filed for reorganization under Chapter 11 of the federal bankruptcy laws. The company cited as reasons for the move a shortage of components for its MS-DOS portable and the financial drain of its copyright settlement with Apple.
- Eagle Computer, denying it is headed toward bankruptcy, has been sued by shareholders contending relevant financial information wasn't disclosed when the firm went public a year ago.

Smiling through the gloom, however, is Apple Computer. Apple honcho John Scully noted at the summer National Computer Conference held in Las Vegas: "Apple has come out of the shakeout as a survivor." He said Apple has exceeded its goal of \$400 million in sales for the first half of 1984. The only problem Apple has, he said, is not being able to meet its demand for its micros.

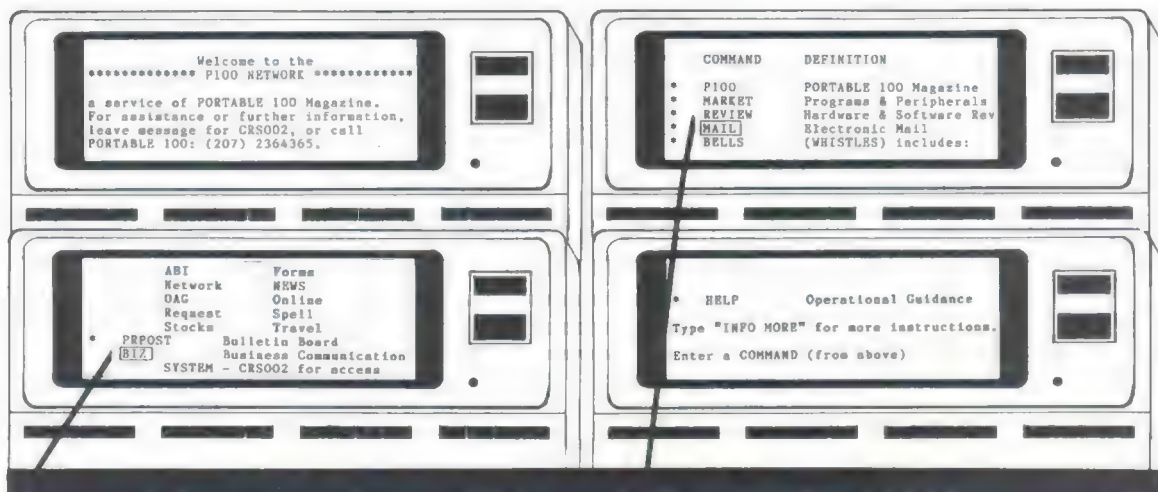
## FUTURE SOLD

Future Computing, one of the leading supplier of marketing and sales data, analyses, and forecasts on the personal computer industry, was acquired by McGraw Hill Inc. for an undisclosed cash sum. The founder of Future Computing, Dr. Portia Isaacson, will continue to act as president and chief executive officer of the firm. Her husband, Dr. Egil Juliussen, will become vice-chairman of the company's new board of directors with responsibility for the content of the firm's information services. ◀



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# BUSCH LEAGUE

DAVID BUSCH



## AUTO-PROGRAM — PART 5 CHANGE REMOVER AND GLOBAL S&R IS YOURS

*This is the fifth in a series of columns by Dave showing Portable 100 readers how to construct a program generator. The columns are based on The Automatic TRS-80 by Dave and published by Tab Books.*

**H**ere with another program in the "REMOVER" mold (Portable 100, June 1984, page 18). This one, "Global Replacer," demonstrates how one program can be adapted to perform a second function.

In concept, the two are almost identical. However, instead of searching for remarks, then deleting them, the program looks for *any* string of the operator's choice. Then, the string is replaced with a second.

The result is a global search-and-replace of a program, much like the same function in a word processing program. However, unlike some word processing programs, the user is shown each occurrence of the search string and offered the opportunity to replace it. You can pick and chose which to replace and which to leave alone.

**SEARCH AND REPLACE.** The search string is input into S\$ in line 90. Since LINEINPUT is used, the string may contain commas and other string delimiters.

The replacement string is entered into RE\$. Then the input and output files are opened, and the first line of the target file loaded into A\$ in line 260.

The user is offered the option of making a query before making the replacement.

A search routine, almost identical to the one in REMOVER, hunts for the string. The difference is line 290, where REMOVER had R=INSTR(P,A\$, "REM"), Global substitutes S\$ for REM.

If R does not equal zero, then the line is cut into two sections. L\$ stores everything in the line up to the beginning of the search string. R\$ includes the rest of the line *after* the search string.

**FLASHING DISPLAY.** Another string, Y\$, is constructed as a series of blanks the same length as the replacement string. If the user has specified querying, control goes to line 360, where an INKEY\$ loop awaits keyboard input. Each time through the loop, L\$, Y\$, and R\$ are printed on the same line, followed by a short delay, then L\$, RE\$, and R\$.

The result is a flashing display with the left and right portions of the program line remaining on the screen,

while the potential replacement flashes on and off in its place.

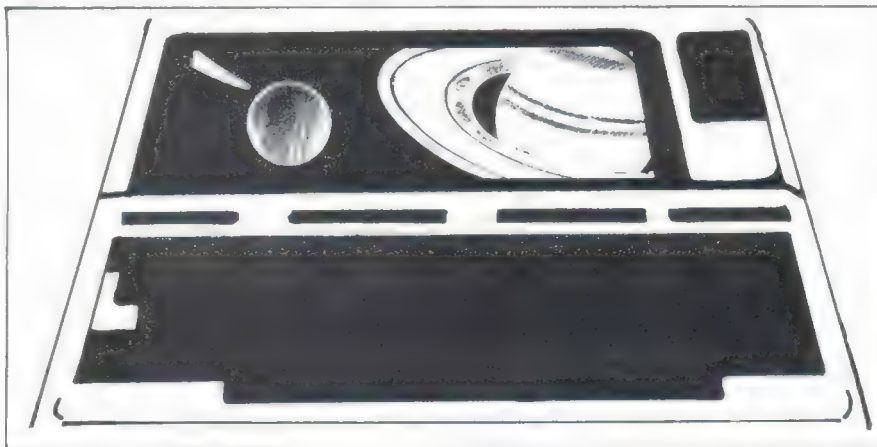
A "Replace it?" prompt asks for a decision. The program will only replace the string if a Y is entered. Any other key will leave the program line as it was.

Once the string has been replaced, the program branches back to look further. If the search string is not found, the program line is printed to RAM in line 490, and a new program line fetched.

Global is a short, but powerful program that will let you make changes rapidly in a given program.

Should you decide to change the name of a variable, substitute one keyword for another (e.g. LPRINT for PRINT), or change prompts and other material within quotes, it will handle them all.

Its chief advantage over using a text editor for the same chore is the ability to examine each line before making the change. In addition, those without word-processing programs can use this utility. ◀





```

10 ' *****
20 ' * *
30 ' * GLOBAL *
40 ' * *
50 ' *****
60 CLEAR 5000
70 MAX FILES =2
75 ' *** Open files ***
80 CLS
   : PRINT
   : PRINT
90 PRINT "Enter name of program to
   be processed :";
100 PRINT TAB(10)"";
110 LINE INPUT F$
120 CLS
   : PRINT
   : PRINT
130 PRINT "Enter string to search for
   :";
140 LINE INPUT S$
150 CLS
   : PRINT
   : PRINT
160 PRINT "Enter string to replace
   with :";
170 LINE INPUT RE$
180 CLS
   : PRINT
   : PRINT
190 PRINT "Do you want to choose
   whether to replace each?"
200 PRINT TAB(10)"(Y/N) "
210 CH$=INKEY$
   : IF CH$=""GOTO 210
220 IF CH$="Y" OR CH$="y" THEN CH=1
230 CLS
240 F1$=LEFT$(F$,4)+"GB.DO"
250 OPEN F$ FOR INPUT AS 1
260 OPEN F1$ FOR OUTPUT AS 2
265 ' *** Look for target string ***
270 IF EOF(1)GOTO 550
280 LINE INPUT #1,A$
290 IF CH=1 THEN CLS

```

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Computer \_\_\_\_\_ Signature \_\_\_\_\_

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# TEXT POWER 100



```

300 P=1
310 R=INSTR(P,A$,S$)
320 IF R=0 GOTO 520

325 ' *** String found ***

330 L$=LEFT$(A$,R-1)
340 E=LEN(S$)

350 R$=MID$(A$,R+E)
360 Y$=STRING$(LEN(RE$),32)
370 IF CH=0 THEN GOTO 490
380 B$=INKEY$

390 PRINT @0,L$;Y$;R$
400 FOR N1=1 TO 50
: NEXT
410 PRINT @0,L$;RE$;R$

420 FOR N1=1 TO 50
: NEXT
430 PRINT
: PRINT

440 PRINT "Replace it? (Y/N) "
450 IF B$="" GOTO 380
460 IF B$="Y" OR B$="y" GOTO 490

```

```

470 P=INSTR(P,A$,S$)+LEN(S$)-1
480 GOTO 310

485 ' *** Replace String ***

490 A$=L$+RE$+R$
500 P=INSTR(P,A$,RE$)+LEN(RE$)-1
510 GOTO 310

520 PRINT #2,A$
530 IF CH=0 THEN PRINT A$
540 GOTO 270
550 CLOSE
555 ' *** Do again? ***

560 CLS
570 PRINT

: PRINT
580 PRINT TAB(6)"Process another
file?"
590 PRINT TAB(10)"(Y/N) "
600 A$=INKEY$
: IF A$="" GOTO 600

610 IF A$="Y" OR A$="y" THEN RUN
ELSE CLS

```

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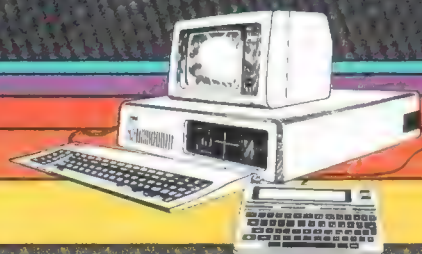
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# PORTABLE COMMANDER

JAKE COMMANDER



## AFTER WEATHERING SOME WHITHERING CRITICISM, JAKE RETURNS THE FIRE

**A**s a writer, it's one's duty to take it as well as dish it out. So, I've developed something of a thick skin as regards my work. Editors have a habit of slashing it to pieces (as is their right), and readers are allowed the option of verbally doing the same in the letters to the editor. It's with this attitude that I realized a reader hit me in the underbelly. Having caught no small amount of flak on the letters page of the March and April issues, I have to object. And defend myself.

Maybe some of my subjects have been controversial; irreverent even. I'll bear the responsibility for that and take the criticisms that they may elicit. I don't even mind being called weird as one particular reader decided. He can't help being right. But he was right for the wrong reason and that's what got my goat.

He said he'd arrived at this decision because of an article of mine he'd read on structured programming. Now I have to object. He was referring to an article I wrote which I am about to elucidate on. In common with many other people he misunderstood what I was saying. Once again, that's my responsibility, so I'll clarify what I said. If anyone decides I'm weird after reading this, then I can only comment that the feeling has to be mutual.

**FLOWCHARTS.** Following from my last column on flowcharts, it's quite appropriate this subject should arise. Flowcharting is about as structured as I like to get as a programmer.

Perhaps because I program a lot in machine code, I enjoy programming using whatever techniques or inspira-

tion the muses hand down to me. And that is definitely meant to imply I see programming more of as art than science. In actual fact it's a bit of both, but I happen to enjoy the feel of creating something in an artistic sense.

What I don't enjoy however is the sense of disapproval doled down from the structured programming fraternity to their less structured brethren. I just happen to think that if you spend a great deal of time programming, you're entitled to decide which techniques you favor and which you don't. If you enjoy using a high degree of structure — fine. If you don't, that's fine too. But as someone who uses less rather than more structure, I don't want to be admonished by some computer science pseud who's never written more than a few payroll routines in Pascal.

**MISUNDERSTOOD.** Now I guess the reason I'm misunderstood in this argument is because even though I see both sides' point of view, I tend to champion the non-structured cause. But in case I'm seen as weird again, let me reiterate: Structured programming is okay, so is unstructured — do whatever's right for you.

Having said that, I'll probably need to repeat it yet again because as a crusader of my cause, I have to wave a flag in my behalf.

It's said (in the cause of structure) that it produces less errors. Baloney. Good programmers are what produce less errors — not good style.

It's said structured code is easier to read. Baloney again. Give me an unstructured Basic program any day as

opposed to a structured piece of APL code. Have you ever seen any of that stuff? Certainly it's an elegant and useful language, but it has more in common with cuneiform than English. My point here is the programming language used has more bearing on readability than structure.

**MORE BALONEY.** Another thing the structurists say is it's easier to maintain. I'm going to have to disagree again. I've been on the maintenance side of the fence and in my experience there's no difference. It can be an absolute bear to update, upgrade, or generally fix up either a structured or unstructured program. Commented code makes more difference than structure. A well-commented routine can be understood and successfully operated much easier than code telling its own story.

C is supposed to be such a self-documenting language (actually, I'm an avid fan of it) but code you've written yourself goes "cold" on you in C as fast as in any other language. Good old comments written in plain English are still required. In other words, the programmer is in control of the style, readability, and maintainability of his program and not some self or otherwise imposed discipline.

So here comes the last reiteration. Whatever your style of programming, use it. Use it more and more. Programming is good. Nurture that style. If it's "bad" style, look out — you'll probably become a worse programmer than the norm. If you happen to possess some talent and aptitude then you'll have a chance to develop into a better programmer than the norm. If you don't like structure, don't feel as if you deserve a slap on the wrist. If you do like structure, how about dropping the elitist aura and just getting on with being a programmer?

Weird huh? ◀



# BOTTOM LINE

BILL WALTERS



## DVI DATA BASE — PART 3: JOE EXAMPLE USES LINK-LIST APPROACH TO DO CHECKS

Over the past several months (*Portable 100*, June and July 1984) I have been describing Joe Example and his search for a small system to use with his finances. He's gone through several trials and lots of tribulations.

This month's saga begins with Joe deciding what he *really* wants is a simple system that displays on the LCD various checks which he can assign to particular accounts. Notice he hasn't mentioned anything about printed output; an obvious fatal flaw! Watch, I'll bet a new 8K RAM upgrade that as soon as he is done with his little program that he'll be complaining again.

Joe has decided to keep everything as simple as possible by using portions from his previous programs. Program listing 1 is the same program used earlier (July 1984) and just changed to use drive 0 instead of drive 1. After running the program, your disk will be structured as in figure 1. Notice for safety sake that Joe has used a *newly formatted* disk. Failure to do so may cost you some lost files! Caveat programmer!

**LINK-LIST DB.** All okay so far, but now Joe has some decisions to make. He knows he wants his disk system to be faster than cassette tape, so he wants to take advantage of some random access capability that is provided with the DVI. It's not going to be easy as he has already discovered, but he's had a few thoughts that may make it easier for him.

Joe has finished reading several books on linked-list data bases. Simply put, this means each record contains an address mark that points both forward to the next record and backward to the

previous record. Joe doesn't want things to get too complicated, so he is going to subdivide his checks into various accounts. He feels this way he will be able to pull information about each account easier than having to sort through each record to see if it pertains to a particular account number.

Remembering each sector contains two 128-byte portions, he decides to use these for his "pointers." He figures as a minimum he needs to know:

- Total number of accounts;
- Total number of records stored; and
- Beginning and ending record number for each account.

Simplicity dictates that standard ASCII will be used, so the information can be easily interpreted by other programs, if desired.

**POINTER LAYOUT.** Figure 2 shows the layout Joe came up with to keep his pointers. Now, he wanted to give each account a name since he hates working

with just numbers. Taking that second 128 bytes and chopping it up into 15 equal parts seemed just the ticket. After all, eight characters ought to be enough for an account name in this simple system. Figure 3 shows this layout.

All that remained was to determine the layout for each individual record. Not too many changes from the previous attempts, just the addition of a check number and two pointers to show the way to the prior and next record for the account (figure 4).

Listing 2 is the small program Joe wrote to enter his account names. He kept it *very* simple; notice there isn't any way to delete an account once it has been entered and no way to correct for a spelling error.

Line 60 reads the pointer record into A\$.

In Line 70 N is set to the current number of accounts while line 80 sets T to the total number of records already stored.

Line 90 reads the account name string from disk into B\$.

Lines 100 through 130 are prompts and questions to make sure you want to continue.

Line 140 sets N to one more than the number of accounts already on file.

Lines 150 to 160 ask you for the account name which is checked for length in line 170.

**UPDATING ACCOUNTS.** If all is okay, the new number of accounts is updated in lines 180 to 190 and then lines 200 to 210 set the account name to the proper location in B\$ and write it back to disk. Line 220 sends you back to repeat the sequence again.

The program which handles the entry of transactions (listing 3) and inquiry is extremely simplistic. It has been constructed in modules to allow changes and additions to be made, since we all know that no program is ever finished.

Lines 50 to 90 clear the screen and some string variable space, and present





the list of options.

Line 100 gets one character from the keyboard and converts it to a numeric value for branching.

Line 110 tests to see if the entered value is within the limits of choices available and loops back if not.

Line 120 handles the branching with a GOTO.

Line 200 calls the subroutine at line 2000 which reads in pointers into A\$ and account names into B\$.

Lines 210 to 220 clear the screen and ask for an account number.

Line 230 checks if you want to stop, otherwise it checks your answer; if it is valid it continues, else returns to ask for your answer.

Lines 240 to 260 give you the account name associated with the number you entered and asks if that is the account you wanted to add to.

Lines 265 to 310 gets each value assigned to variables and asks if it is all correct.

Assuming all is okay, 330 zeros Z\$ while 335 to 370 set certain segments of Z\$ to the appropriate values that were entered.

Line 373 gets the value of the current "last record number" in the system and that value is incremented by one in 375.

Line 377 then sets the new current last record number back in A\$.

Line 380 gets the first and last record numbers associated with the account.

**DOES IT EXIST?** In line 390 the test of LR=0 is a shortcut to see if any records already exist. If LR=0 (no last record), then no records exist, so the first record is set to the computed record number FR=R.

In line 395 a variable is created for previous record and set to the old last record PR=LR. The last record is then set to current record number with LR=R.

Line 400 resets the last record pointer for this account and 410 resets the first record pointer after testing for equality, so it is changed *only* on the first transaction entered to the account.

Line 420 sets the previous record number into Z\$ and 430 sets 0 in Z\$ to indicate no next record.

Line 440 uses a subroutine call to create the actual track, sector, and half values to write to in lines 450.

Line 460 updates record pointers A\$.

Line 470 sets the next record equal to the current record and the current rec-

ord equal to prior record in preparation for updating the prior transaction record that now needs to point to the newest entered transaction instead of indicating 0 which would mean no next transaction.

Line 480 reads in the prior transaction to Z\$, 490 sets a new pointer for the newly entered record number, and 500 writes it back out properly.

Line 510 sends us back up to the menu.

**DISPLAYING ACCOUNT.** Showing a single account to the screen begins in line 600 by clearing the screen and getting the pointers and account numbers into A\$ and B\$, respectively.

Lines 610 to 650 act exactly as lines 210 to 260, except the line numbers are changed.

Lines 660 to 670 are the same as 380 which gets the first and last record numbers for the account.

Lines 680 checks for at least one valid record; if none, it gives you an error and asks all over again.

Lines 690 clears the screen, sets the record number to the first record, and calls subroutine at 1000 to set up track, sector, and half values for disk read operation to come.

Lines 700 reads record into Z\$.

Lines 710 to 760 pull apart Z\$ and print the values at appropriate spots on the screen.

Line 780 checks for the forward record using FR as a variable; if none, 785 to 790 tell you so.

Line 795 waits for one keystroke to continue. If there are no more records to show, you go back to the main menu, else loop back to 690 to begin again.

**LISTING ACCOUNTS.** The listing of account numbers and names is done with a simple loop beginning at line 800.

Line 800 checks to see if the account is valid with one or more entries. If not, it goes back to the main menu.

Lines 850 to 860 clear the screen and print a heading and a blank line.

Line 870 reads in pointers and account names to A\$ and B\$.

Line 880 sets the number of accounts to value from pointer in A\$.

Line 890 sets up a For-Next loop to go from one to the number of accounts, and prints the name from the indicated section of B\$ in line 900.

Line 910 checks for done and goes again if not.

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Line 920 checks for any key to continue.

Subroutines begin in lines 1000 and 2000.

The first subroutine is used to compute the proper track, sector, and half for a given "record number".

Line 1000 adds 792 to the value of the record number since our data base begins on track number 22 (21 tracks times 18 sectors times 2 records per sector = 792).

Line 1010 computes the track number, 1020 computes the sector number, and 1030 decides which 128 byte portion of the sector the record is in.

Line 1040 (appropriately enough) returns the subroutine to the calling point.

Line 2000 reads in the pointers from track 21, sector 1, first half, into variable A\$ while 2010 reads in the account names from track 21, sector 1, second half, into B\$.

Line 2020 returns to the calling point.

This example is obviously not a comprehensive data-base program. It was written to illustrate the approach to using the Disk-Video Interface in a random access manner and was intended to act as a tutorial for that purpose.

This example can be expanded in many ways and in fact needs to be to be truly useful. Such items as editing routines for account names and entries are missing, as well as options for printed output of account listings and even sorted output of the accounts by month. All of these are possible since a modular approach was used in the building of the example.

I hope that you enjoyed this little foray into programming. It has once again taught me several things along the way also! ◀

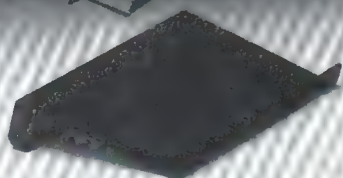
Track	Used by
0	System
1	System
2	.....
3	.....
4	.....
5	.....
6	.....
7	.....
8	.....
9	.....
10	.....
11	.....
12	.....
13	.....
14	.....
15	.....
16	.....
17	.....
18	.....
19	.....
20	Directory & File Allocation Tables
21	Number Accounts, Number Records, Acct. Indexes and Acct. Names
22	CHECKS.DAT
23	CHECKS.DAT
24	CHECKS.DAT
25	CHECKS.DAT
26	CHECKS.DAT
27	CHECKS.DAT
28	CHECKS.DAT
29	CHECKS.DAT
30	CHECKS.DAT
31	CHECKS.DAT
32	CHECKS.DAT
33	CHECKS.DAT
34	CHECKS.DAT
35	CHECKS.DAT
36	CHECKS.DAT
37	CHECKS.DAT
38	CHECKS.DAT
39	CHECKS.DAT

Figure 1. Disk Structure

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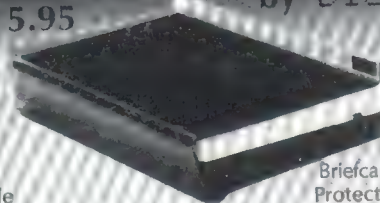
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Bytes	Description
1 - 2	Number of Accounts on file
3 - 6	Number of Records on file
7 - 10	Acct #1 Beginning Record number
11 - 14	Acct #1 Ending Record number
15 - 18	Acct #2 Beginning Record number
19 - 22	Acct #2 Ending Record number
23 - 26	Acct #3 Beginning Record number
27 - 30	Acct #3 Ending Record number
:	:
:	:
:	:
:	:
:	:
119 - 122	Acct #15 Beginning Record number
123 - 126	Acct #15 Ending Record number

Figure 2. Pointer Layout

Bytes	Description
1 - 8	Acct #1 Name
9 - 16	Acct #2 Name
17 - 24	Acct #3 Name
25 - 32	Acct #4 Name
33 - 40	Acct #5 Name
41 - 48	Acct #6 Name
49 - 56	Acct #7 Name
57 - 64	Acct #8 Name
:	:
:	:
:	:
:	:
:	:
121 - 128	Acct #15 Name

Figure 4. Character Locations.

Bytes	Description
1 - 4	Check Number
5 - 12	Date (MM/DD/YY)
13 - 50	Written to
51 - 101	For
102 - 120	Amount
121 - 124	Pointer to prior record for this account
125 - 128	Pointer to next record for this account (0=no next)

Figure 3. Account Layout

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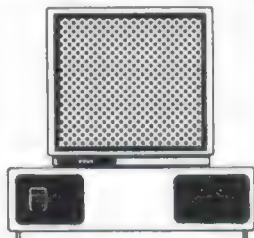
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## WALTERS

### Program Listing 1. Initialize Disk.

```

10 ' Initialize newly formatted disk
   ' for use
20 ' June 12, 1984
30 ' by Bill Walters and Joe
   ' Example
40 '
45 CLEAR 2000
50 A$="CHECKSDAT"+CHR$(0)+CHR$(42)
60 N=1
   : M=0
70 FOR L=0 TO 7
80 C$=MID$(DSKI$(0,20,N,M),1+16*L,
   ' 16)
90 IF LEFT$(C$,1)=CHR$(0) OR
   ' LEFT$(C$,1)=CHR$(255) THEN 200
   ELSE NEXT L
100 IF M=0 THEN M=1
   : GOTO 70
110 M=0
   : N=N+1
   : GOTO 70
200 B$=DSKI$(0,20,N,M)
210 MID$(B$,1+16*L,16)=A$
220 DSKO$(0,20,N,M,B$)
300 FOR I=43 TO 79
310 FOR M=16 TO 18
320 B$=DSKI$(0,20,M,0)
330 MID$(B$,I,1)=CHR$(I)
340 DSKO$(0,20,M,0,B$)
350 NEXT M
360 NEXT I
370 FOR M=16 TO 18
380 B$=DSKI$(0,20,M,0)
390 MID$(B$,80,1)=CHR$(201)
400 DSKO$(0,20,M,0,B$)
410 NEXT M
500 B$=SPACE$(128)
510 DSKO$(0,21,1,0,B$)
520 DSKO$(0,21,1,1,B$)
530 STOP

```

### Program Listing 2. Enter Accounts.

```

10 ' Create Accounts
20 ' June 12, 1984
30 ' by Bill Walters and Joe
   ' Example
40 '
50 CLS
   : CLEAR 2000
60 A$=DSKI$(0,21,1,0)
70 N=VAL(MID$(A$,1,2))
80 T=VAL(MID$(A$,3,4))
90 B$=DSKI$(0,21,1,1)
100 PRINT "Create Accounts"
110 PRINT
   : PRINT "Create Account #";N+1
120 PRINT "OK to Continue (Y/N) ";
   : R$=INPUT$(1)
130 IF R$="y" OR R$="Y" THEN 140
   ELSE PRINT
   : PRINT "OK, Stopping now "
140 N=N+1
150 PRINT "Account #";N
160 INPUT "Name (8 characters max) ";
   N$
170 IF LEN(N$)>8 THEN 160
180 MID$(A$,1,2)=STR$(N)

```



# WALTERS

```
190 DSKO$ 0,21,1,0,A$
200 MID$(B$,8*N)=N$
210 DSKO$ 0,21,1,1,B$
220 GOTO 110
```

## Program Listing 3: Enter Transactions.

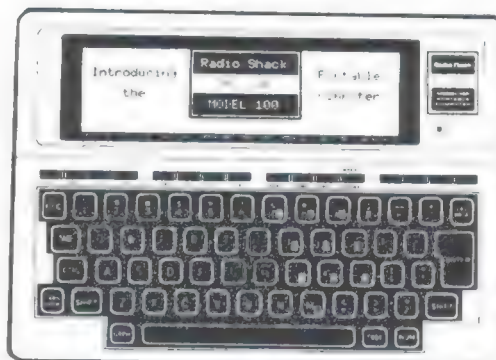
```
10 ! Add to Accounts
20 ! June 12, 1984
30 ! by Bill Walters and Joe
   Example
40 !
50 CLS
   : CLEAR 2000
60 PRINT " 1 Enter Transaction"
70 PRINT " 2 Account Listing"
80 PRINT " 3 List Single Account"
90 PRINT " 4 End"
100 Z$=INPUT $(1)
   : C=VAL(Z$)
110 IF C<1 OR C>4 THEN BEEP
   : GOTO 100
120 ON CGOTO 200,850,600,150
150 STOP
200 GOSUB 2000
210 CLS
   : PRINT TAB(10);"Transaction
   Entry"
   : PRINT
220 INPUT "Account Number (0=stop) ";
   AN
230 IF AN=0 THEN 50
   ELSE IF AN<1 OR AN>VAL(MID$(A$,1,
   2)) THEN BEEP
   : GOTO 210
240 PRINT "Name : ";MID$(B$,AN*8,8)
250 PRINT "Correct Account? (Y/N) ";
   : Z$=INPUT $(1)
260 IF Z$="Y" OR Z$="y" THEN 265
   ELSE 210
265 INPUT "Check Number: ";CN
270 INPUT "Date Written (MM/DD/YY) ";
   D$
280 INPUT "Written to: ";P$
290 INPUT "For: ";F$
300 INPUT "Amount: ";AM$
310 PRINT "All OK? (Y/N) ";
   : Z$=INPUT $(1)
320 IF Z$="Y" OR Z$="y" THEN 330
   ELSE 265
330 Z$=SPACE$(128)
335 MID$(Z$,1)=STR$(CN)
340 MID$(Z$,5)=D$
350 MID$(Z$,13)=P$
360 MID$(Z$,51)=F$
370 MID$(Z$,102)=AM$
373 R=VAL(MID$(A$,3,4))
375 R=R+1
377 MID$(A$,3)=STR$(R)
380 FR=VAL(MID$(A$, (AN*8)-1,4))
   : LR=VAL(MID$(A$, (AN*8)+3,4))
390 IF LR=0 THEN FR=R
395 PR=LR
   : LR=R
400 MID$(A$, (AN*8)+3)=STR$(LR)
410 IF FR=LR THEN MID$(A$, (AN*8)-1)=
   STR$(FR)
420 MID$(Z$,121)=STR$(PR)
430 MID$(Z$,125)=STR$(0)
```

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LONG	84.128	LONG	84.134	LONG	84.010
			01.33.08	ETE	24.26
Date	05/27/84	SPEED	22.0	NM	537.5
Time	01:31:22	CRSE	287.0	CRSE	286.8
Fix	Spd	Crse	Dest	Print	Hold
					Menu

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FIX	FREQ	LONG.	VEL	HDG.	TOTAL	BS	LEG	FUEL	ATA
DFW	117	32.518							
		97.017							
J-21	117	31.4	240	182	73	350	0.13	3241	_____
DFW 182/T3		97.167	20	185	73	337	0.13	759	_____
J-21	114.6	30.178	260	187	85	400	0.14	2783	_____
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Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

## WALTERS

```

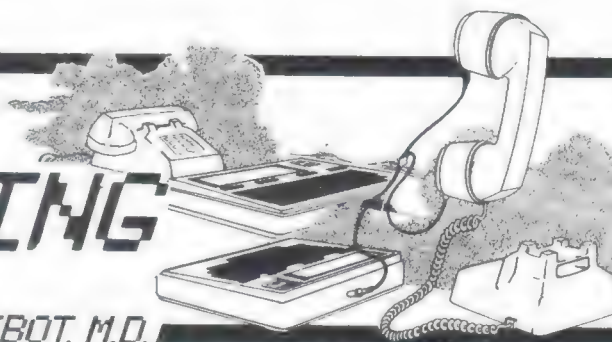
440 GOSUB 1000
450 DSKO$ O,T,S,H,Z$
460 DSKO$ O,21,1,0,A$
470 NR=R
    : R=PR
    : GOSUB 1000
480 Z$=DSKI$ (O,T,S,H)
490 MID$(Z$,125)=STR$(NR)
500 DSKO$ O,T,S,H,Z$
510 GOTO 50
600 CLS
    : PRINT TAB(10); "Show Single
    : Account"
    : GOSUB 2000
610 INPUT "Account Number (0=Stop) ";
    AN
620 IF AN=0 THEN 50
    ELSE IF AN<1 OR AN>VAL(MID$(A$,1,
    2)) THEN BEEP
    : GOTO 600
630 PRINT "Name : "; MID$(B$,AN*8,8)
640 PRINT "Correct Account ? (Y/N) ";
    : Z$=INPUT $(1)
650 IF Z$="Y" OR Z$="y" THEN 660
    ELSE 600
660 FR=VAL(MID$(A$, (AN*8)-1,4))
670 LR=VAL(MID$(A$, (AN*8)+3,4))
680 IF LR=0 THEN PRINT "No Records on
    File"
    : BEEP
    : GOTO 600
690 CLS
    : R=FR
    : GOSUB 1000
700 Z$=DSKI$ (O,T,S,H)
710 PRINT @40, "Check: "; MID$(Z$,1,4);
720 PRINT @65, "Date: "; MID$(Z$,5,8);
730 PRINT @80, "Amount: "; USING "$$##,
    ###.##"; VAL(MID$(Z$,102,19));
740 PRINT @120, "Pay: ";
750 PRINT @160, MID$(Z$,13,38);
760 PRINT @240, MID$(Z$,51,51);
780 FR=VAL(RIGHT$(Z$,4))
785 IF FR=0 THEN PRINT "No more - ";
790 PRINT "any key for next";
795 I$=INPUT $(1)
800 IF FR=0 THEN 50
    ELSE GOTO 690
850 CLS
    : PRINT TAB(10); "Listing of
    : Accounts"
860 PRINT
870 GOSUB 2000
880 N=VAL(LEFT$(A$,2))
890 FOR I=1 TO N
900 PRINT I; TAB(5); MID$(B$, (I*8),8)
910 NEXT I
920 PRINT
    : PRINT " any key for menu "
    : Z$=INPUT $(1)
    : GOTO 50
1000 A=R+792
1010 T=((A-1)\2)\18
1020 S=((A-(T*36))+1)\2
1030 H=(A+1) MOD 2
1040 RETURN
2000 A$=DSKI$ (O,21,1,0)
2010 B$=DSKI$ (O,21,1,1)
2020 RETURN

```



# TELECOMPUTING

LEE ZEHNGEBOT, M.D.



## BRS AFTER DARK CAN ANSWER MOST-ASKED QUESTION AMONG DOCTORS

This month's telecomputing column is written by a guest columnist, Lee Zehngobot, M.D.

**W**hat does it say in the literature?" is a frequently heard question in conversations between physicians. In the past, answering that question usually meant long hours searching the *Index Medicus*. Now there's an electronic alternative.

**BRS RESCUE.** For many years librarians have been able to search medical literature using MEDLARS (Medical Literature Analysis and Retrieval System). The service, established by the National Library of Medicine, has data bases containing thousands of references from medical journals and books since 1965. It also searches for words in titles and abstracts.

For the most part, though, physicians did not have access to this system, until Bibliographic Retrieval Services (BRS), which supplies the MEDLARS service to many libraries, made some of the data bases available to Model 100 users through their "After Dark" service.

Before getting too involved with After Dark, you should know the service is not cheap. There is a \$50 initial charge for getting your password. There is (at least for the time being) a "minimum" cost per month of \$12.

To quote BRS "Your monthly minimum After Dark charge of \$12 is based on two hours online at the basic connect hour rate of \$6. The higher hourly rate for some data bases (MEDLARS is \$14) reflects royalty fees which BRS After Dark must pay to the data-base producer, and the amount exceeding

\$6 is therefore not applicable toward your monthly minimum charge."

**TWO HOURS, \$28.** Whew! Basically, there is almost no one who understands what all that means. However, to use up your minimum two hours on MEDLARS would cost \$28. While one hour would cost you \$14, this would not take care of your \$12 minimum, since BRS gets only \$6 of that. Please, don't ask me to explain that again.

Using After Dark is made substantially easier with the auto-dialing and auto-log-on programs of the Model 100. Although the BRS manual tells you to set parity at null, I have found it works only when parity is set at Ignore. The STAT should read : M711D, 10pps. The auto-log on sequence I use is for Telenet (exhibit 1).

You will note a few unusual features in the log-on sequence.

First, although the BRS manual tells you to answer a question about duplex, I have found it unnecessary. I use the Model 100 on full duplex (pressing F4 will change the duplex) and have never had any problems.

Second, it may seem unusual to have the computer wait for a semi-colon for the second password, but again, that works better than anything else.

**TWO QUESTIONS.** This log-on sequence also answers two questions BRS asks. The first is the number of columns for your terminal. (I answer 80.) The second question asks the number of rows on your terminal. (I answer with a carriage return.)

When you finish logging in, your screen will be similar to exhibit 2. The Newsletter (2) and What's New Category (6) are valuable for new information, although BRS does charge the minimum for the time you spend there.

But let's say you decide you want to go right to MEDLARS. There are basically two ways to go: the fast way and the slow way.

**SLOW WAY.** In the slow way, you choose option 1 from the menu. This will give you categories of data bases. Answer 1 to the next question, and all of the Science/Medicine data bases will be displayed.

You then ask for MESH, which is the MEDLINE data base from 1979 to date.

BRS will ask if you are a new user to After Dark, and whether you would like a description of the data base. After going through this ordeal once, you will never want to do so again.

To get around this, you could type: 1;1;MESH;NO;NO <enter>, which answers all of the questions at the same time. In fact, if you only want to use After Dark for Medlars, you could use the auto log-on sequence in exhibit 3.

With this sequence, you give the answer 5000 to the number of rows right after giving the number of columns. I know it seems crazy, but it works.

```
BRS :[Telent number]<=^M=^M?TD1^M?@C
31520B^M?P[password]^M?:[AMIS security
password]^M==?)80^M=?S=^M>:
```

Exhibit 1. After Dark Log-On.



Access: mag2[75745,1050]

Enter ? for list of valid commands

Access: typ mag2[75745,1050]  
16-Dec-83 21:49 Fr [75745,1050]

TONIGHT'S MENU IS:

NUMBER ITEM

- 1 LOOKING FOR INFORMATION?...SEARCH SERVICE
- 2 WANT TO HEAR THE LATEST?...NEWSLETTER SERVICE
- 3 NEED A PROGRAM?...SOFTWARE SERVICE
- 4 KEEP IN TOUCH!...ELECTRONIC MAIL SERVICE
- 5 LET'S MAKE A DEAL!...SWAP SHOP
- 6 WHAT'S NEW?...NEW SYSTEM FEATURES
- 7 WANT TO CHANGE YOU SECURITY PASSWORD?...  
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TYPE IN MENU ITEM NUMBER THEN HIT ENTER KEY FOR DESIRED SELECTION

*Exhibit 2. First After Dark Screen.*

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**UNINET.** Using Uninet, it is now possible to designate a "break" key, so you can interrupt the menu, give the above sequence, and be right into MEDLARS. You could probably incorporate this into your auto-log-on sequence as well. A sample Uninet log-on sequence is given in exhibit 4.

Let's say you would like to find some articles about non-union in fractures of the tibia. The sequence would look like exhibit 5.

After narrowing my search, I type the print command, hit the download key (F2), name a file, and then sit back and let the entire set of references load into my Model 100.

Each short reference "costs" about 225 bytes. The echo command (F5) on the Model 100 allows you to print the display if you have a good, fast printer (I don't).

**EASY PRINTING.** Having stored the references at 80 columns allows me to print them out using an entire piece of paper. Also, since I didn't tell After Dark my display is only 20 rows, it doesn't keep interrupting my reference list to press the return key to continue.

Then when I'm all done, I sign off (always writing down the number of minutes I was on) by typing "O". Then I go back to the menu, find the file I just created, and print it.

Besides MEDLARS, there are many other data bases offered in BRS After

```
BRS :[Telenet number]<=^M=^M?TD1^M?@C
31520B^M?P[Password]^M?:[AMIS security
password
]^M==?)80;5000;1;1;MESH;NO;NO^M>:
```

Exhibit 3. Direct Log-On to MEDLARS.

```
Uninet number: <=^M?:OWL;A^M?P(Password)
^M?:(AMIS security password)^M==?)
80^M=?S=^M>:
```

Exhibit 4. Uninet Log-On.

Dark. Of particular interest is BIOSIS, which also provides access to biological and medical information; CHEMICAL ABSTRACTS; NTIS, which provides access to government reports in science and technology; and PRE-MED, which indexes citations from 109 medical journals before they are put into MEDLARS.

**VALUABLE TOOL.** BRS After Dark is a valuable research tool. It is expensive, and the absence of a "break" key when using Telenet is annoying.

By the way, if you start printing ref-

erences which you don't want, just disconnect (F8). After Dark stops charging you when you get out; however, you will have no record of how much time you used for that session.

With the minimum requirement, it would be nice to be able to call up After Dark and find out how much time you've used for a certain month.

Otherwise, don't hesitate to call BRS if you have any problems. They are knowledgeable and friendly and will try to help you. For more information, write: BRS/After Dark, 1200 Route 7, Latham, NY 12110. ◀

```
TYPE IN SEARCH TERMS
S1 --> TIBIAS (S1 is the first search question)

A1 4093 ITEMS FOUND (A1 is the answer to the first question)
ENTER COMMAND S (S tells MEDLARS that you want another search question)

TYPE IN SEARCH TERMS
S2 --> FRACTURES

A2 12742 ITEMS FOUND (still too big)
ENTER COMMAND S

TYPE IN SEARCH TERMS
S3 --> NON UNION

A3 170 ITEMS FOUND (getting better, but still too many references)
ENTER COMMAND S
```

Exhibit 5. Sample Search.



# FUNKEY STUFF — 3: TAPE BACKUP, NAME, COPY, KILL

In this final episode, Jesse fills out RFU by adding tape backup, name, kill, and copy functions.

By JESSE BOB OVERHOLT

**A**h, it's good to see everyone back for the final installment in the RFU mini-series. Four new functions will be installed in this article, along with some minor tune-ups. As before, I have included the complete listing of RFU (program listing 1) for the benefit of those who may have joined us late.

Before going into the "biggies" let me call attention to a few minor changes not in previous listings of RFU. If you have been keying as you go, you will want to make these changes in your copy.

Note some additional lines from 150 to 153. These were added for the support of the copy function.

Also added for copy are lines 57000 to 57040. The operation of this subroutine will be covered later.

Last, but not least, remove the variable following the NEXT in lines 50080 and 50090. This reduces program clarity a bit, but does improve speed on loading the directory into array FI\$.

For an average Model 100 filled to approximately 75 percent of capacity it will take about 3 seconds for the directory to be loaded. This works out to roughly three files per second.

**COPYING RAM FILES.** If you have RAM files, sooner or later you will want to copy one or more of them. The rule for copy is the source file is the one selected by the cursor in the RFU menu. Any legal Model 100 file specification may be used for the destination. Appending is allowed if the destination is also a RAM file.



Note copy does not provide formatting for the output device. If you want to print a file use the list function, rather than copy to "LPT:". It is also specifically *not* recommended you copy a file to itself unless you want to see farking of RAM on a major scale!

Copy begins with KEY OFF, followed by a check for a .DO file. While it seems perfectly logical to be able to copy .BA and .CO files, it is unfortunately not possible to access these files in Basic. Thus we can copy only .DO files.

Line 4030 displays the name of the file to copy and line 4040 gets the specification for the destination file.

In line 4050 this name is converted to upper case characters. This step is not necessary so far as Basic is concerned, but does make things a little easier later. After the name is converted, the destination file name is displayed in line 4060.

A check is made in line 4070 for the destination being another RAM file. If it is not, we skip to 4100. Otherwise we determine whether this is to be a new file or appended to an existing file. By the time control reaches line 4100 the

variable AP will be set to indicate whether we are appending to the destination file.

At line 4100 a menu is displayed indicating the kinds of copies that can be made. The names for these copies were specified on data statements in lines 151 through 153 and were loaded into array CT\$ at line 150. Feel free to change the data statements for names most meaningful for you.

**STRANGE CHR\$.** Note in line 4110 the use of CHR\$(I+48). This may look a bit strange to the uninitiated, but it is simply a way of printing the digits 1 through 3 on successive lines between the < > signs. I chose this method rather than simply printing the value of 'I' because Basic always puts spaces around a number printed between string values.

Line 4120 prompts for the copy. It took me a few tries to get the cursor to appear where I wanted without having to figure out exactly what location to PRINT@ in order to get it there. The method I use is to PRINT@ to the beginning of the line where the cursor is, and then add POS(0) (which indicates where the cursor is on the current line) with whatever adjustment is necessary. This may not be terribly elegant, but it is very functional.

If the copy is a type 1 (straight duplication) or type 2 (line concatenation) the program proceeds to line 4170. For type 3 (string replacement) we have to get the string to be searched for (SS) and the string that is to replace it (RS).

Note a null string will not be accepted as the search string. Would it make any sense to replace every occurrence of nothing in a file?

The replacement string is specified in line 4160. Here a null string is accepted, since we can replace something with nothing.

At line 4170 we are at last ready to announce the copy is in progress. I turned the cursor on here (ESC and P) so there would be some indication that something was happening.

Line 4180 computes the length of the file to be copied and opens both files. Then in 4190 we depart to the subroutine appropriate for the type of copy to be done.

**DUPLICATION COPIES.** Straight duplication copies in line 4200 are the simplest. We simply see the .DO file



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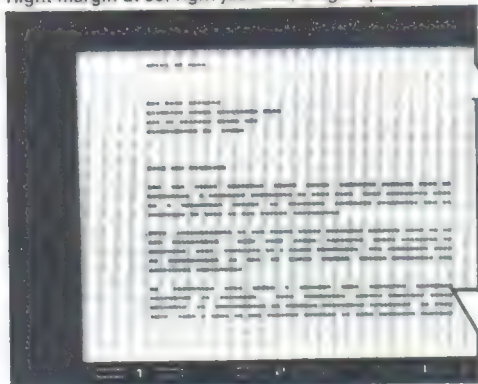
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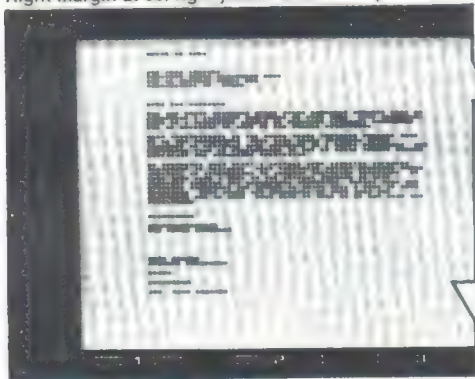
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copy subroutine at line 57000. This routine was written to be fast. Since we know how long a file is (variable LN), we can copy in large blocks. Due to restrictions on string length, a length of 255 is the largest we can handle.

Line 57010 determines how many blocks of 255 characters exist in the file. If none, we skip to 57030. Otherwise the 255 character blocks are copied in 57020. Wrapping up in 57030, we copy whatever is left in one gulp.

Notice the use of the INPUT\$ function to move blocks of characters without any regard for what characters are actually in RAM. If we were to use INPUT or LINE INPUT, it would take much longer, since each input would terminate when a carriage-return, line-feed sequence was found. That's also the reason for ending each PRINT to the destination file with a semicolon. We don't want to add extra carriage-return, line-feed characters to the file.

**CONCATENATION.** Concatenation copies begin at line 4300. For those who did not major in computer science, concatenation is a high-tech way of saying two things (usually strings) are joined together.

Most veteran downloaders have at one time or another latched on to a text file prepared by some misguided degenerate who formatted it for a screen with a width of 58.3 characters. When this file is displayed on the 100's LCD it breaks at every end of line, making it difficult to read.

The concatenation copy attempts to untangle this mess by removing all the extra end-of-line codes so the file will list correctly. Be advised, though, this process is by no means infallible, and it may well introduce farkling of its own.

Line 4300 initializes an infinite loop. Yes, that's right, an infinite loop. Of course we will terminate after a finite period (when End Of File is detected) — we're just using the infinite loop as a control structure.

The joining of lines begins at line 4310, where we get a line from the file. If the line is not blank, we go to line 4340.

For blank lines we do a PRINT to the destination to end the current line. Then we check to see if the previous line was blank by testing flag L.

If the previous line was blank, we do another print in 4320 to put another blank line in the output file. Regardless

of whether the previous line was blank, L is reset and we go to 4350 to continue the loop.

Lines of text are output in line 4340. A space is output at the end of each line, but the PRINT terminates in a semicolon to prevent the end-of-line code from being propagated to the output file.

The loop recycles at 4350, unless EOF has been detected. In that case we go on to 4900 to finish up.

**REPLACEMENT COPIES.** The trickiest copy is the replacement copy, which begins at 4400. First we set X\$ to null and L to the length of the search string S\$.

Then in 4410 begins another of the infamous infinite loops. The first thing done in this loop is to check to see whether X\$ contains enough characters to be compared to S\$. If it does then it's on to line 4430.

In 4420 a check is made to see if the number of characters required exceeds the length of the file. If so then I is set to 1 to shut off the loop and go to 4450. Otherwise X\$ is increased by the number of characters needed and the length of the file (LN) is reduced accordingly.

At 4430 X\$, the working buffer of

*Program Listing 1. RFU Finalized.*

```

1 'RFU by Jesse Bob Overholt
2 'Version 2.00
100 'Initialization
110 CLEAR 800
    : MAX FILES =2
    : DEFINT A-Z
    : ON ERROR GOTO 9900
120 DIM FL$(25), FL!(25)
130 ES$=CHR$(27)
    : RV$=ES$+"p"
    : NV$=ES$+"q"
    : CL$=ES$+"K"
    : CF$=ES$+"J"
140 CC$=CHR$(29)+CHR$(28)+CHR$(30)+CHR$(31)+CHR$(13)
150 FOR I=1 TO 3
    : READ CT$(I)
    : NEXT I
151 DATA "Duplication"
152 DATA "Line Concatenation"
153 DATA "Text Replacement"
190 ON KEY GOSUB 1000,2000,3000,4000,5000,6000,7000,8000
200 'Read directory, & display it
210 GOSUB 50000
220 GOSUB 51000
    : IX=1
230 X$=RV$
    : GOSUB 52000
300 'Select file & get function
310 PRINT @0,DATE$;" ";DAY$;" ";TIME$;
    : KEY ON
    : X$=INKEY$
    : IF X$="" THEN 310
320 CC=INSTR(CC$,X$)
    : IF CC=0 THEN 310
    : ELSE KEY OFF
    : X$=NV$
    : GOSUB 52000
330 PRINT @240,CL$;
    : ON CCGOSUB 400,500,600,700,800
340 X$=RV$
    : GOSUB 52000
    : GOTO 300
400 'Cursor left
410 IF IX>1 THEN IX=IX-1
    : ELSE IX=NF
420 RETURN
500 'Cursor right
510 IF IX<NF THEN IX=IX+1
    : ELSE IX=1
520 RETURN
600 'Cursor up
610 IF IX>4 THEN IX=IX-4
620 RETURN

```



# FUNKEY STUFF

```

700 'Cursor down
710 IF (IX+4)<=NF THEN IX=IX+4
720 RETURN
800 IF RIGHT$(FL$(IX),2)="BA" THEN
    RUN FL$(IX)
810 IF RIGHT$(FL$(IX),2)="DO" THEN X$=
    "Menu"+CHR$(13)+FL$(IX)+CHR$(13)
    : GOSUB 53000
    : CLS
    : END
820 RETURN
1000 'F1 - File size
1010 KEY OFF
1020 CLS
    : PRINT "File: ";RV$;" ";FL$(IX);
    NV$;TAB(20);"Location: ";FL!(IX)
1030 GOSUB 54000
    : PRINT
    : PRINT "File size: ";LN;"bytes."
1040 IF RIGHT$(FL$(IX),2)<>"DO" THEN
    1100
1050 X=INT(LN/30+.5)
    : L=INT(X/60)
    : X=X-L*60
1060 PRINT
    : PRINT "Time to upload: ";L;
    "Min.";X;"Sec."
1100 X$="to continue."
    : GOSUB 55000
1110 GOSUB 51000
    : X$=RV$
    : GOSUB 52000
    : RETURN
2000 'F2 - List a file
2010 KEY OFF
2020 IF RIGHT$(FL$(IX),2)<>"DO" THEN
    9000
2030 PRINT @240,CL$;"List to <D>isplay
    or <P>rinter? < >";
2040 PRINT @240+POS(0)-2,"";
2050 X$=INPUT $(1)
    : L=INSTR("DPdp",X$)
    : IF L=0 THEN 2050
2060 IF L>2 THEN L=L-2
    : X$=MID$("DP",L,1)
2070 PRINT X$;
    : AD!=FL!(IX)
    : CLS
    : ON LGOTO 2100,2200
2100 GOSUB 2800
    : FOR I=1 TO 500
    : NEXT I
    : CLS
2110 X=PEEK(AD!)
    : AD!=AD!+1
2120 IF X=26 OR INKEY$=ES$ THEN PRINT
    : GOTO 2900
2130 IF X<33 THEN PRINT CHR$(X);
    : GOTO 2110
    ELSE X$=""
2140 X$=X$+CHR$(X)
    : X=PEEK(AD!)
    : AD!=AD!+1

```

continued on page 39

Circle No. 30 on Reader Service Card

# TRS-80

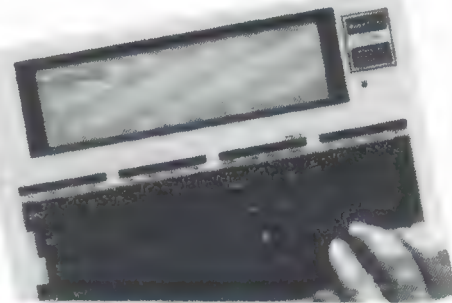
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characters, is checked to see if we have matched the search string 'SS'. When a match occurs we output the replacement string R\$ (using a semicolon to suppress unwanted end-of-line codes) and set the buffer X\$ to null. Then it's back to 4450 for another trip around the loop.

Should the buffer fail to match the search string, then in line 4440 we lop off the leftmost character of X\$, output it, and begin again. This process seems agonizingly slow, but thanks to the miracle of modern electronics it's much faster than mere humans can do.

All copy functions wind up at line 4900, where the cursor is turned off (ESC and Q), the screen is cleared, and the good news is proclaimed. A "Push ENTER" pause is injected here so you can leave the computer, come back, and see that the copy is finished. Then the directory is reloaded. This step is necessary since we may have created a new file in RAM. The menu is the displayed and we are back where we started.

**RAMNESIA.** It's two o'clock in the morning and you have just finished keying in a 22K Basic program. Eager to try it out, you do a RUN before checking your typing.

Unfortunately the first line has two digits of a POKE address transposed. Your 100 emits a couple of plaintive beeps, displays a screen of graphic characters reminiscent of an Arabic funeral announcement, flickers briefly, and then comes up with the familiar menu display. Except that *all* files are now gone and you have 29K of free RAM.

Oops! "Oh well, guess I'll have to reload from my backup cassette in the morning," you mumble as you amble off for some much-needed rest. Hours later you sit bolt upright in bed as you remember you were about to make a backup when channel 98 ran that great movie classic "Andy Hardy Meets the Dallas Cowboys Cheerleaders." You don't have a backup!

If this has happened to you then you have experienced RAMnesia, that dreaded malady which causes your RAM memory to forget all you laboriously taught it.

Although my computer has "lost it's mind" on several occasions, I never gave much thought to preparing for such misfortunes. I did check with my insurance company, Lloyds of Lubbock, but they couldn't offer much

help. Then one night, while cruising the Model 100 SIG on CompuServe, I happened on a message from someone looking for a program to copy all of the RAM files to cassette. Having one function key in RFU still undefined, an idea was born.

**BIRTH OF BACKUP.** Several days later the "Bkup" (Backup) function was working. It allows some or all .DO and .BA files to be copied automatically to cassette. Alas, .CO files cannot be copied, but most 100 owners don't have many files of this type. Copying to cassette takes about five minutes per 10K, so even a full 100 can be backed up in less than 15 minutes.

The backup function (F5 on your menu) starts at line 5000. By now you will have noticed each routine begins at the line equal to the function key number times 1000. Well you should have noticed it!

Once again we open at 5010 with the obligatory KEY OFF and a banner proclaiming the backup function. Subroutine 52000 is called to remove the cursor from the menu. Then at 5030, we check to see if we are backing up all the files, or just selected ones.

Lines 5040 and 5050 get the choice, convert it to upper case, and set up a string (CY\$) containing one N for each file in the directory. Starting a loop in 5060, we skip any file with a .CO extension. If a backup of all files was selected then for each file we set X\$ to Y and go to 5080.

Line 5070 will only be executed if selected files are being copied. It asks, file by file, whether a file is to be backed up or not. Line 5080 sets the character associated with each file to Y if it is to be copied, or N if it is not. Files to be copied are marked by displaying the name on the screen in highlighted form.

When the loop terminates at 5090 we move on to 5100 and check to see whether a pause is desired before each file is copied. This was done to allow for backing up a large number of files to multiple cassettes. Then in 5110, we pause for enter before starting the backup. This gives you a chance to set up the recorder. It is not necessary to run the tape ahead past the leader — the backup function performs this. Just put in a cassette, cable up, and go.

Line 5120 proclaims the backup open for business, and 5130 puts some blank tape at the start of the cassette.

**DIRECTORY SCAN.** A scan of the directory starts in 5140, looking for a file called simply @.BA. This file has certain magic properties discussed later. If found, it is copied to tape immediately. Otherwise it's on to bigger things.

A directory of all files in the backup is written to cassette in 5160 through 5190. This file is called [DIR], and it contains the name and length of every file backed up, in the order they were written to cassette.

If @.BA is not in RAM, this file will be the first one on the cassette. Otherwise it will be the second.

When trying to reload RAM from a backup this should be the first file you load. It will list all of the files on the cassette, in the order they were written. The length of each will also be given, so you can check your free memory as you go.

Line 5200 begins the actual backup loop. It skips any file whose corresponding flag in CY\$ is set to N. Pauses, if selected, are taken at 5210. Then a subroutine at 5400 is called to make the actual backup copy. When the backup completes at 5300, we display a message, redisplay the menu, and go back to waiting for function keys.

Line 5400 determines what type of file (.DO or .BA) is being backed up and gets its length.

Line 5410 announces the name of the file and its length, and puts a short space of blank tape in front of the file. Then 5420 selects the copy subroutine, 5600 for .BA files and 5500 for .DO files. After the copy, 5430 clears the LCD and returns.

The .DO file backup in 5500 to 5510 is exactly the same as a straight replacement copy and uses the same copy routine.

Copying a .BA file, starting in 5600, is fairly complex. First we have to set up X\$ to do a couple of POKEs. These commands are then loaded into the key buffer by the subroutine at 53000.

Next, in 5610, we save the beginning address of the current program (RFU) with the least significant byte in B and the most significant in T.

**NOW THE MAGIC.** Now comes the magic. Line 5620 POKEs the address of the file to be copied into locations 63100 and 63101. This is functionally equivalent to LOADING that file, except all variables are preserved this way. As-tute bit twiddlers will recognize immediately this technique could be used



to chain from one program to another. I'll go into that another time!

Even though we have switched programs, Basic still thinks it is executing RFU. The last thing it does on line 5620 is a CSAVE of the required file. Use of CSAVE here is most important. The SAVE command cannot be used because it wipes out all variables. CSAVE just saves the program and goes back to Basic.

Recall that we pre-loaded the keyboard buffer back in line 5600. When CSAVE finishes, it goes back to the keyboard for input. We now do two POKES to put RFU back in memory (actually it never moved — we're just telling Basic to run it again) and then return. Don't panic if you don't understand this. It took me weeks to figure it out!

When all the necessary files have been backed up we go to line 5310. This announces completion and 5320 waits for enter. Line 5330 re-displays the menu and returns to wait for the next function keypress.

**NAME FUNCTION.** We still have the F6 and F7 function keys available for use. I chose to use F6 to perform the NAME function. Granted the NAME command is simple enough to use by just typing it in. Using the menu, though, does make it a little easier.

The complete name change function resides in lines 6000 to 6080. This routine is very straightforward. After getting the new file name and converting it to all capital letters, we check for the presence of an extension. If none has been entered, then in line 6060 we append the existing file's extension to the new name. Finally, in 6070, we rename the file and update the menu display with the new name.

**RAM FILE MASSACRE.** Every now and again we find ourselves with files we no longer need. The Basic kill command, violent though it may be, is used to exterminate these unwanted byte collections. Of course you need to put the name in quotes and spell it correctly. RFU makes KILLing easier, and also gives you a chance to reconsider.

Function key 7 begins at line 7000. In 7020 we get verification the user really wants to kill the selected file. If a Y response is made, then the file is erased, and the directory is displayed anew. A response of N leaves the file untouched.

**BREW YOUR OWN.** At this point you should have a working version of RFU in your 100, unless you were only au-

ditating the course. You're probably sitting back in your easy chair mumbling "If only I could have a (mumble . . . mumble) function instead of this stupid (mumble . . . mumble) function." Well, that's the beauty of RFU. If you don't like one of the functions, just edit it out and replace it with one of your own.

There are a few key points to remember. First, be sure to begin your routine with KEY OFF. On entry to your routine variable IX will always point to the element of array FL\$ containing the name of the file selected by the cursor. The RAM address of this file will be in the corresponding entry

in array FLI. Use the subroutines at lines 50000 and up freely. They will save you memory.

Now are there any questions? What happened to the renowned @.BA program? Ah, yes, we never did get to that did we? Well @.BA is a short Basic program that completely reconstructs all RAM files from a cassette backup created by RFU. I had originally intended to offer it in this, the last of the RFU chronicles. Unfortunately we are out of time. You are hereby cordially invited to a seminar devoted to @.BA to be held next month. I'm looking forward to seeing you there! ◀

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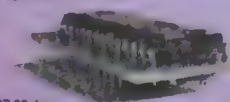
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# FUNKEY STUFF

continued from page 35

```

: IF X>32 THEN 2140
2150 I=40-POS(0)
: IF LEN(X$)>I AND LEN(X$)<40
THEN PRINT
2160 PRINT X$;
: GOTO 2120
2200 CLS
: P=66
: T=3
: B=3
: L=64
: M=8
: N=1

2210 PRINT "Page length (lines) [";P;
";]";
: INPUT P
2220 PRINT "Top margin [";T;"]";
: INPUT T

2230 PRINT "Bottom margin [";B;"]";
: INPUT B
2240 PRINT "Line length [";L;"]";
: INPUT L

2250 PRINT "Left margin [";M;"]";
: INPUT M
2260 PRINT "Copies [";N;"]";
: INPUT N

2270 GOSUB 2800
: GOSUB 2430

2300 X=PEEK(AD!)
: AD!=AD!+1
2310 IF X=26 OR INKEY$ =ES$ THEN 2500

2320 IF X=13 THEN GOSUB 2400
: X=PEEK(AD!)
: AD!=AD!+1
: IF X=10 THEN 2300
ELSE 2310

2330 IF X<33 THEN LPRINT CHR$(X);
: GOTO 2300
ELSE X$=""

2340 X$=X$+CHR$(X)
: X=PEEK(AD!)
: AD!=AD!+1
: IF X>32 THEN 2340

2350 I=L-LPOS(0)+M
: IF LEN(X$)>I AND LEN(X$)<L
THEN GOSUB 2400

2360 LPRINT X$;
: GOTO 2310

2400 LPRINT
: C=C-1
: IF C>0 THEN 2460

2410 IF B=0 THEN 2430
2420 FOR I=1 TO B
: LPRINT
: NEXT I

2430 IF T=0 THEN 2450
2440 FOR I=1 TO T
: LPRINT
: NEXT I

2450 C=P-T-B
2460 LPRINT SPACE$(M);
: RETURN

2500 C=C+B
2510 IF C>0 THEN LPRINT
: C=C-1
: GOTO 2510
2520 IF X<>26 THEN 2540
2530 N=N-1
: IF N>0 THEN GOSUB 2430
: AD!=FL!(IX)
: GOTO 2300
2540 GOTO 2900
2800 PRINT @280,"Push <ESC> to stop.";

2810 RETURN
2900 X$="for menu."
: GOSUB 55000
2910 GOSUB 51000

: X$=RV$
: GOSUB 52000
: RETURN
3000 'F3 - Make a memo
3010 KEY OFF
3020 IF RIGHT$(FL$(IX),2)<>"DO" THEN
9000
3030 OPEN FL$(IX) FOR APPEND AS 1
3040 PRINT #1,STRING$(39,"-")
3050 PRINT #1,DAY$;" ";DATE$;" ";
TIME$
3060 CLOSE
: GOTO 810

4000 'F4 - Copy a file
4010 KEY OFF
4020 IF RIGHT$(FL$(IX),2)<>"DO" THEN
9000

4030 CLS
: PRINT "Copy ";RV$;" ";FL$(IX);
NV$;" to: ";RV$;" ";

: X=POS(0)
4040 FL$=""
: LINE INPUT FL$

```

Listing continued on page 51



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disk drive. An optional second disk drive (#26-3807, \$239.95\*) can be added to increase the data storage capacity to 368K. Either way, you get the power to create, store and retrieve files quickly and easily, much faster and more conveniently than with a cassette storage system.

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*Circle No. 33 on Reader Service Card*





# A MARRIAGE OF STATE-OF-THE-ART MICROCOMPUTERS

Software savvy and cabling creativity make the 100-to-Mac connection.

Illustration by Rod McCormick



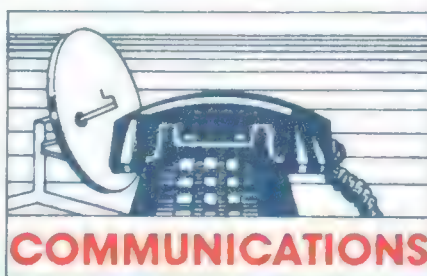
By DANNY GOODMAN

**F**ew personal computers have aroused my childlike, high-tech enthusiasm enough for me to refer to them as "really neat." The IBM PC, although popular, is simply a competent workhorse. The new Apple IIc, although updated and attractively packaged, is still a basic 1976 computer.

No, I must say through all these years, only two humanly affordable computers have caused me to subject unsuspecting passersby to impromptu show-and-tell sessions: the Model 100 and the Apple Macintosh.

Both computers share the element of portability, the Radio Shack being the more portable of the two by far. The Mac (as it's affectionately called by anyone who has changed a text font in mid-sentence) is more accurately a transportable — "lugable" someone once called this class of 20- to 30-pound computer. To thousands of 100 owners, however, any computer over five pounds belongs anchored to a desktop, while the 100 gets to go everywhere.

There surely must be a way to transfer 100 text files created on the road to the Mac, despite the Mac's proprietary and behind-the-scenes activity inside the computer. Indeed, there is. In fact, you can swap text files in both directions.



**MAC CONCERNS.** Making your 100 communicate with the Macintosh actually is no different than communicating with a computer like the IBM PC or a Radio Shack desktop computer. You use TELCOM in the 100 and some kind of telecommunications software for the Mac. The two computers are cabled together via their respective serial (RS232) ports. We'll see how to do this in a moment.

What's different about the Model 100-to-Mac connection, however, is the most popular, and only available, Macintosh word-processing software. MacWrite can work only with a document that the Mac recognizes as a MacWrite Document. MacWrite cannot open a straight text file (ASCII file) for editing or printing.

Working in the other direction, you can save a MacWrite document as a

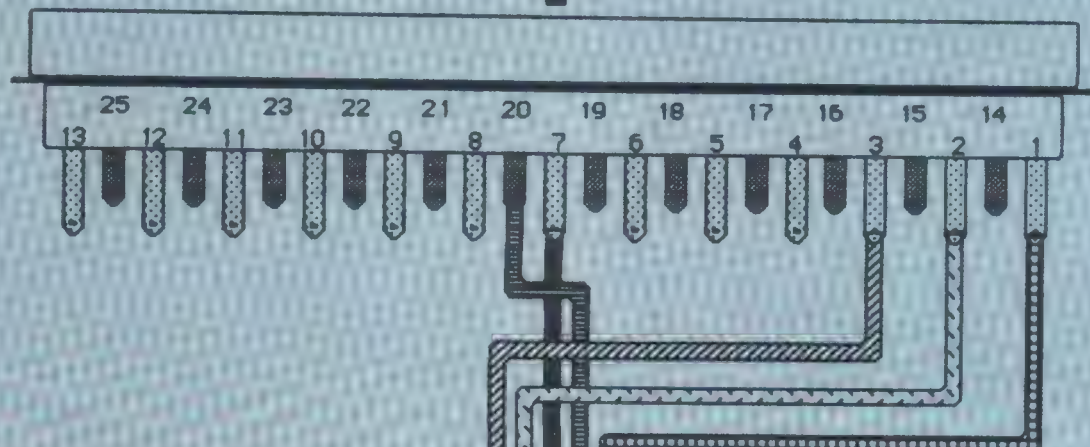
"text only" file: one where MacWrite formatting commands aren't saved with the document. This makes file transfer from the Mac to the 100 a snap. But how can you get over that ASCII-to-MacWrite conversion hurdle?

**MAUG AND MACTEP.** The answer, as most 100 CompuServe fanatics will be glad to hear, lies in the CompuServe SIG for Apple users, MAUG (CIS page PCS-51). On one of the data bases is, among public domain Mac programs, a Microsoft Basic utility program called MakWrite, written by Dennis Brothers. Once an ASCII file is downloaded to a Mac disk file, this program converts the file so MacWrite will read it — the utility is really just changing attributes of the file's directory listing to make it compatible with MacWrite. Opening the document with MacWrite you can add any formatting you like, as well as change font styles and sizes to please your slightest whim.

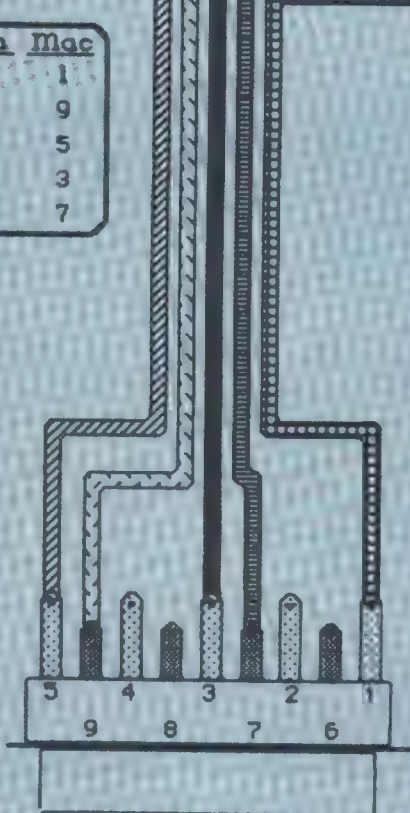
Since Apple, as of this writing, still hasn't delivered its communications software program, called MacTerminal, it's worth noting the MAUG SIG also comes to the rescue of Mac owners who want to communicate. Using another communicating computer (like the Model 100), you can download a



To Model 100 RS-232 Port



m100	Signal Description	Mac
1	Frame Ground	1
2	Transmit Data	9
3	Receive Data	5
7	Signal Ground	3
20	DTR	7



To Macintosh Serial Port

Figure 1. Model 100-to-Macintosh Cable Configuration.



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short Mac MS-Basic program from the SIG's XA database. This "brute forces" its way through downloading a more substantial MS-Basic terminal emulator program for the Mac, also written by Dennis Brothers. (See accompanying story about how to use your 100 to get this software.)

MacTep (version 1.81 is the one I tested for this article) is a "no frills" communications program from the MAUG data base. The only parameter you can reset is the baud rate. After that, there are three commands: one each for uploading an ASCII text file, downloading an ASCII text file, and downloading a Basic file. The Basic file downloading actually is just a variation of the ASCII file downloading routine. It stores the incoming program as an ASCII file, but lines lacking a starting program line number (like CompuServe data-base prompts) aren't saved on the disk.

**MAC SERIAL PORT.** One of the mysteries of these early days of the Macintosh is what goes on at the serial ports on the rear panel. Unlike computers such as the 100, Radio Shack desktop

models, and IBM/Apple computers with plug-in serial cards, the Mac has a non-standard, 9-pin serial connector for the machine's serial printer port and modem port.

The output signals from these ports also aren't an RS232 standard per se. Rather, the serial ports on the Mac subscribe to RS422 — a communications standard that allows faster data-transfer speeds over longer cable distances than the RS232C standard. These ports, however, can be made compatible with RS232C devices like modems and other computers, provided you construct a proper cable linking the two devices.

In keeping with the Mac's "computers for people" philosophy, there isn't any system software supplied with the computer to assist a knowledgeable user in reconfiguring the ports to suit a variety of peripherals. Your only recourse is to follow the guidelines or options available on telecommunications software.

In the case of MacTep, the program automatically sets the parameters for communications with an on-line service like CompuServe. Your only variable

parameter is the baud rate. But in communicating with the 100, the lack of flexibility isn't bad. This way you know whatever parameters (data bits, stop bits, parity) you have set on the 100 for CompuServe will be fine when you link up with the Mac.

**THE CRITICAL LINK.** The most difficult, yet important, part of computer communications for non-technical users is the cabling of non-standard devices. Trying to make a cable is no easy feat if you don't have experience with a soldering iron. And sometimes even modest experience isn't quite enough to master the tiny, close-quarters connections on a 25-pin RS232 connector (solderless connectors are nearly impossible to work with when making custom cables).

I've discovered, however, a cable already exists that plugs directly between the Mac's modem port (the one with the telephone icon) and the 100's serial port. It turns out the printer cable that comes with the Macintosh accessory kit for the Apple Imagewriter printer has the correct pinouts. If you want to have to keep swapping one cable between

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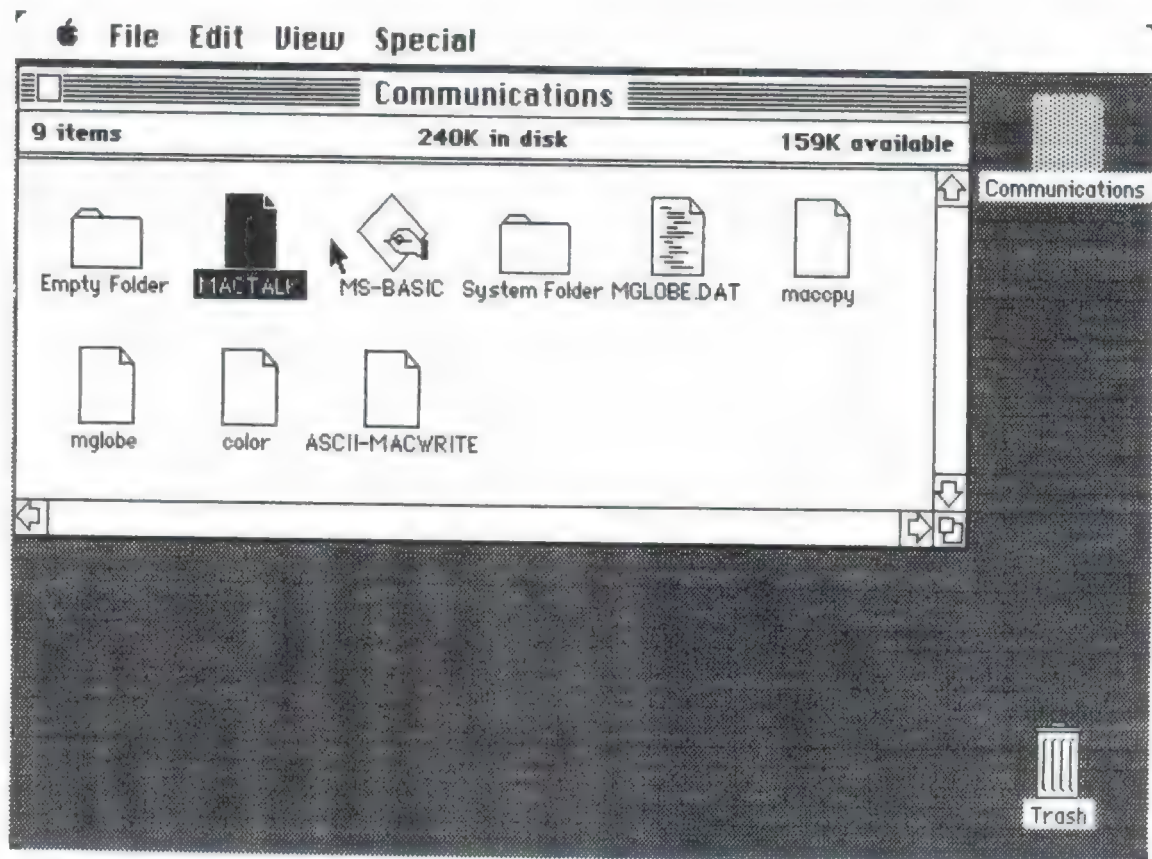


Figure 2. Macintosh desktop with communications program (MACTALK) selected.

the printer and your 100 (and from the Mac's printer port to modem port), it'll be worth your persistent effort.

Otherwise, if you're comfortable wiring a cable (or know someone who can do it for you), then follow the cable diagram in figure 1. The lead running from pin 20 on the 100 plug to pin 7 on the Mac plug isn't required for 100-to-Mac communications. It could be,

though, if you ever use the cable for other serial devices.

**A TYPICAL SESSION.** For you to see what it's like to move text from the 100 to the Mac, I've assembled a series of Mac screens during a typical transfer. In this example, I'll be moving a document created on the 100 to the Mac and turning it into a MacWrite document,

complete with a few fancy fonts.

The first step is to connect the appropriate cable between the 100's RS232 port and the Mac's telephone icon serial port. Next, I start the Mac's communications program, whose name I've changed in my Mac disk directory to MACTALK (an adaptation of the great IBM PC communications program, PC-TALK). Notice in figure 2

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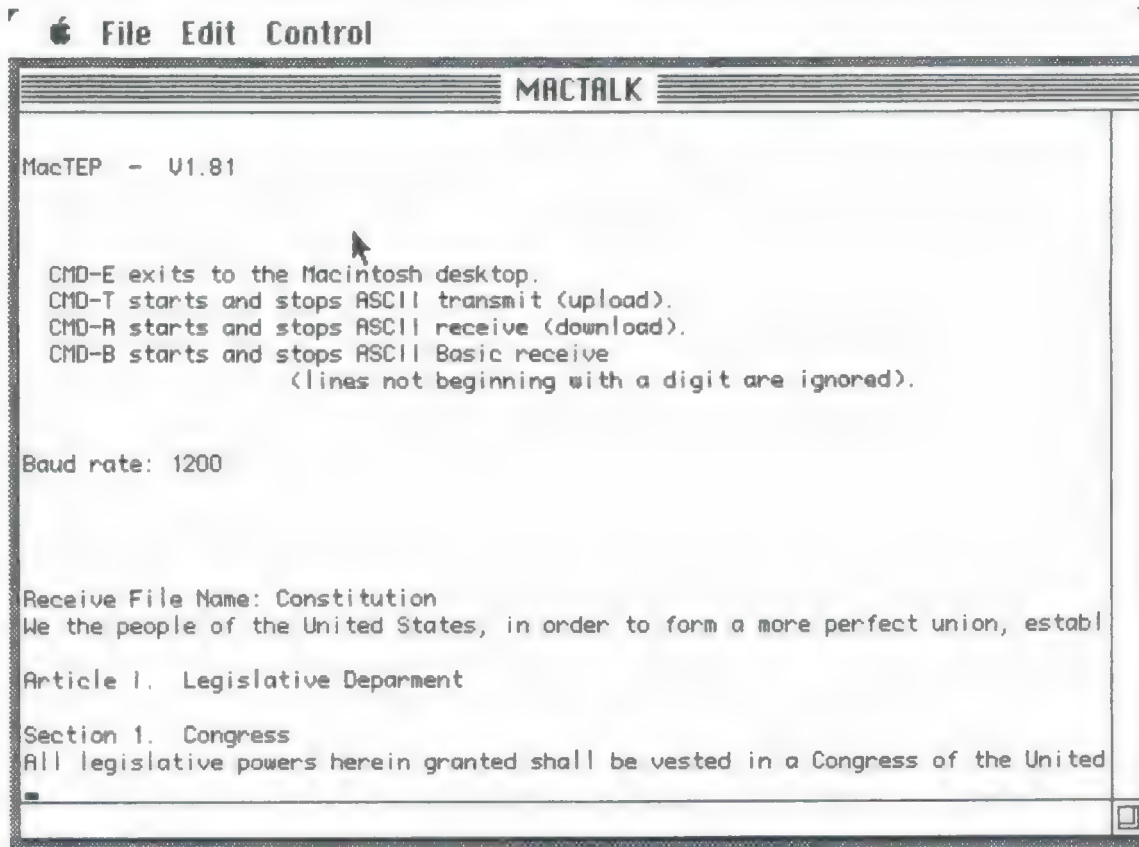


Figure 3. MACTALK (MacTEP v. 1.81) program screen, with command list and incoming text being saved in file named "Constitution"

that this program requires MS-BASIC to run. All I have to do to start the program is use the mouse to move the screen pointer to the icon (picture) of the MACTALK program, and press the mouse button twice (called double-clicking in Mac lingo). The Mac automatically loads MS-BASIC and runs the program.

The top two-thirds of figure 3 shows

the title screen of MacTEP. Its simple commands are presented, as is the prompt for the baud rate. I've typed 1200 baud here.

**BACK AT THE 100.** At the 100's end, select TELCOM from the main menu and use STAT (F3) from the function key menu to change the 100 communication parameters to 1200 baud, 7 data

bits, ignore parity, 1 stop bit, and XON enabled (Status parameters 5711E). Then press F4 (Term) to set the 100 in Terminal mode.

At this point, the two machines should be communicating with each other. Type a few characters on each keyboard to prove that your cable and parameters are properly adjusted. At the Mac, press command R to begin the

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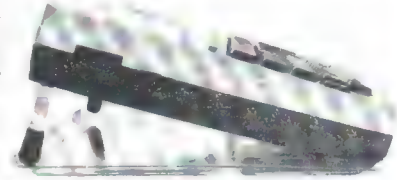
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receive-action. As shown in figure 3, the Mac asks you to type in a file name for the document to be saved on micro-disk. The Mac is ready to receive.

Now, at the 100, start uploading the 100 document by pressing F3 (up). A prompt appears in the LCD screen for the name of the file to upload. After you type in the name and the computer verifies that such a file exists, you're prompted for the width of the text. For this transfer, simply press return, signifying you don't want any extra carriage returns placed inside the document (only at the end of each paragraph). That way, MacWrite will be able to format the text according to its own rules.

**MACWRITE.** The 100 begins sending text to the Mac. Incoming text races across the Mac's screen, with text of long lines running off the right margin of the screen (see figure 3, bottom).

When the file is transferred, you must issue another command R on the Mac to close the file. Exit the Mac's communications program and start MacWrite (which I've renamed ASCII-MacWrite in figure 2), the program that converts ASCII files to MacWrite files. All this program requires is you to type the name of the file to convert.

After MacWrite does its wonders, quit the program and eject the disk (leaving the window with the document

open). Next, insert the MacWrite disk and double-click the icon of the document. Since it's been converted to a MacWrite document, the Mac begins loading the MacWrite program into the computer immediately. After a couple of disk swaps (on a single drive Mac), the document automatically is loaded into MacWrite. You can now make changes to the text and its physical characteristics, including adding pictures created with MacPaint, the outstanding Macintosh graphics program (see figure 4).

If you'd want to take the edited document with you on the road, you'd simply save the document as a text-only file (probably with a different name, so as not to cover up the original with all its formatting, text, and graphics attributes). That text-only file can then be transferred to the 100 for editing in TEXT. You'd invoke command T in the MacTep program and down (F2) in the 100's TELCOM.

**MACWRITE CAUTION.** One important point to remember about MacWrite is its documents are size-limited to about 10 pages, single-spaced (this article would fit comfortably as one MacWrite document). If you import and convert a document that's too long for MacWrite to load, you'll run into problems, including getting lost in an

endless loop of swapping disks.

The best way around this is to keep an eye on the size of your documents in the 100. (A simple document file size-measurement program can be found in my recent book, *The Simon & Schuster Guide to the TRS-80 Model 100*.) Break up long documents as needed. When printing the final document with MacWrite, you can link pieces together by starting each segment with an appropriate page number.

Microsoft Word for the Macintosh doesn't have this restriction on document size. It uses the disk as virtual memory — loading into RAM only the current chunk of text you're working on, while maintaining the balance of the document on disk. As it turns out, a document converted from ASCII to a MacWrite document by the MacWrite program also can be read by Microsoft Word (at least in the pre-release sample of the program I tested).

**COMPUTER COMBO.** If you share my excitement for these two marvelous, predominantly user-friendly computers, then it should be a comfort to know you can move information from one to the other. You can't beat the convenience of the 100 away from the office. And you can't beat the outstanding features of the Mac when you return. ◀

## HOW TO GET SOFTWARE FOR THE MAC TO 100 CONNECTION

If you don't have a communications program for the Macintosh, here's how to use the 100 and the CompuServe, Apple, Special Interest Group (MAUG) to get the software you need.

Provided you already subscribe to CompuServe, the first step is to join MAUG (there's no extra charge). To do this, select MAUG from the personal computing menu or go directly to it by typing "GO PCS-51" at the exclamation prompt. Leave a short message addressed to SYSOP (System Operator) with a subject heading of Membership Request, telling him or her you want to join. Within a couple of days, you'll be able to sign on to MAUG and have access to messages and data bases.

From the function menu within MAUG, type XA. In response to the question: From which database?, select 4 — the Mac/Lisa software data base. A short menu appears. Instead of select-

ing any of those options, type: TYP BASCAP.BAS without pressing enter. Press F2 (down) on your 100 and assign a name to the file in response to the prompt. When the down legend reverses (light letters on black background), press enter again. CompuServe will start sending the program.

When the program ends (a command menu will be sent at the end), press F2 again to stop downloading. Exit from the data base, MAUG, and CompuServe. Either print out the text of the file you just downloaded or read from it while typing the program into Microsoft Basic on the Macintosh. Carefully proofread the listing in the Mac against the one in your 100 for safety.

Attach a modem to your Mac, and run BASCAP (a simple capture program) to download a program called MACTEP, the telecommunications

program described in this article. Use the same TYP command as you did with the 100. Once you get the file, leave MAUG again, and load this new program into MS-Basic. (You may have to delete some lines at the beginning and end of the file which aren't part of the program.)

This should make it easy to transfer files to and from your 100 and Mac. Go back into the MAUG data base to download MAKWRT, a program that converts ASCII files from your 100 into MacWrite files for your Mac. Now you're all set.

(Note: As of this writing, there was discussion about possibly breaking out a separate SIG for Mac/Lisa interests. If so, the PCS and data-base numbers and the program names in the data base may be different. Follow the Help offerings on the SIG for more details.) ▶



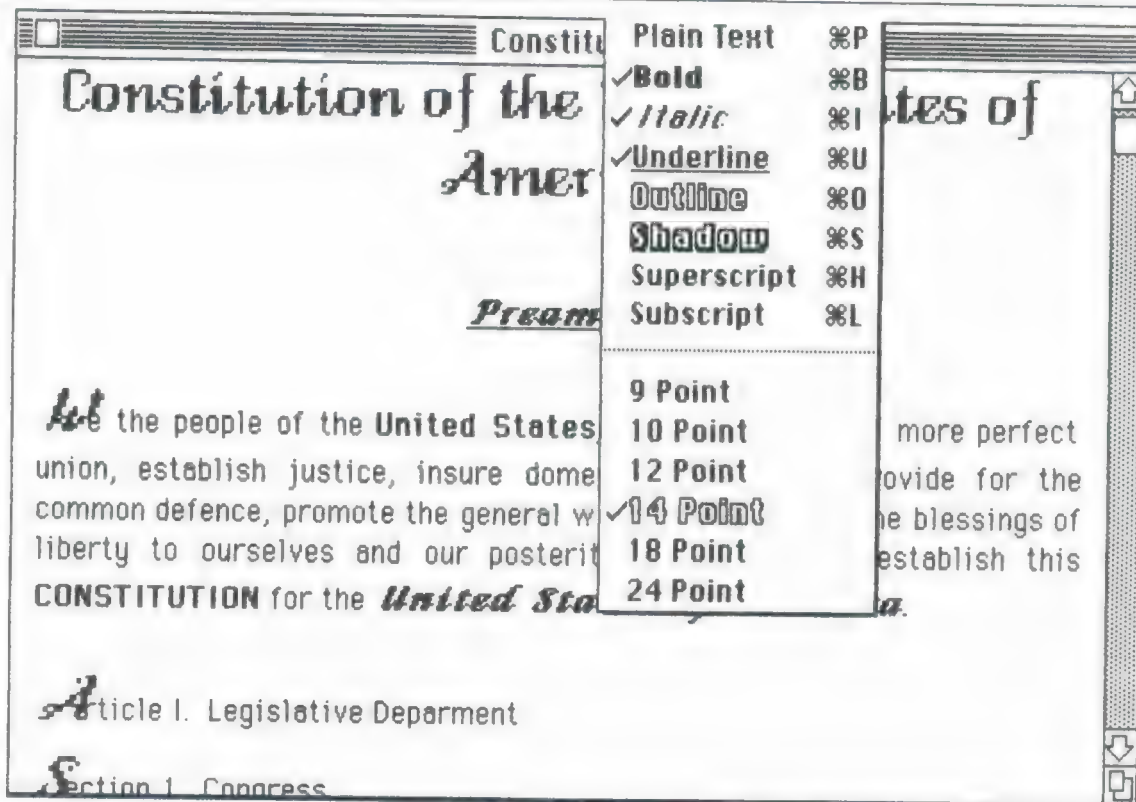
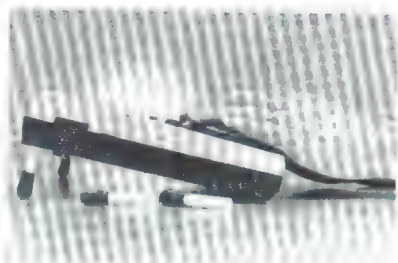


Figure 4. Document transferred from Model 100 as augmented by MacWrite software on the Macintosh.

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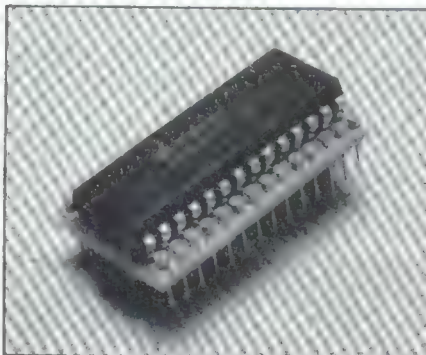
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## FUNKEY STUFF

Listing continued from page 39

```

: IF FL$="" THEN PRINT @X,"";
: GOTO 4040
4050 FOR L=1 TO LEN(FL$)
: I=ASC(MID$(FL$,L,1))
: IF I>96 AND I<123 THEN
MID$(FL$,L,1)=CHR$(I-32)
4060 NEXT L
: PRINT @X,FL$:NV$;
4070 AP=0
: IF INSTR(FL$,".")>0 AND
LEFT$(FL$,4)<>"RAM:" THEN 4100
4080 PRINT @40,"Append to ";FL$;

4090 GOSUB 56000
: AP=(X$="Y")
4100 PRINT @80,"Copy types available:"
4110 FOR I=1 TO 3
: PRINT "<";CHR$(I+48);"> ";
CT$(I)
: NEXT I
4120 PRINT @280,"Which type of copy?
< >";
: PRINT @280+POS(0)-2,"";
4130 X$=INPUT $(1)
: CT=INSTR("123",X$)
: IF CT=0 THEN 4130
ELSE PRINT X$;
4140 PRINT @80,CF$
: IF CT<3 THEN 4170
4150 PRINT "Text string: ";
: LINE INPUT S$
: IF S$="" THEN CT=1
: PRINT @80,CF$
: GOTO 4170
4160 PRINT "Replacement: ";
: LINE INPUT R$
4170 PRINT @80,CT$(CT);" copy in
progress...";ES$;"P";
4180 GOSUB 54000
: LN=LN-1
: OPEN FL$(IX) FOR INPUT AS 1
: IF AP THEN OPEN FL$ FOR APPEND
AS 2
ELSE OPEN FL$ FOR OUTPUT AS 2
4190 ON CTGOTO 4200,4300,4400
4200 GOSUB 57000
: GOTO 4900
4300 L=0
: FOR I=0 TO 1
: IF EOF(1) THEN PRINT #2,""
: GOTO 4350
ELSE I=0
4310 LINE INPUT #1,X$
: IF LEN(X$)>0 THEN 4340
4320 PRINT #2,""
: IF L THEN PRINT #2,""
4330 L=0
: GOTO 4350
4340 PRINT #2,X$;" ";
: L=L+1
4350 NEXT I

```



# FUNKEY STUFF

```

: GOTO 4900
4400 X$=""
: L=LEN(S$)
4410 FOR I=0 TO 1
: I=0
: X=L-LEN(X$)
: IF X=0 THEN 4430
4420 IF X>LN THEN I=1
: GOTO 4450
ELSE X=X+INPUT$(X,1)
: LN=LN-X
4430 IF X=S$ THEN PRINT #2,R$;
: X=""
: GOTO 4450
4440 PRINT #2,LEFT$(X$,1);
: X=MID$(X$,2)
4450 NEXT I
: PRINT #2,X$;
: IF LN>0 THEN PRINT #2,INPUT$(LN,1);
4900 PRINT ES$;"Q";
: CLS
4910 CLOSE
: PRINT "Copy completed."
4920 X$="for menu."
: GOSUB 55000
4930 GOSUB 50000
: GOSUB 51000
: IX=1
: X$=RV$
: GOSUB 52000
: RETURN
5000 'F5 - BACKUP files
5010 KEY OFF
5020 PRINT @0,CL$;"RAM file BACKUP to
cassette";
: X$=NV$
: GOSUB 52000
5030 PRINT @280,CF$;"<A>11 or
<S>elected files? < >";
: PRINT @280+POS(0)-2,"";
5040 X$=INPUT$(1)
: M=INSTR("ASas",X$)
: IF M=0 THEN 5040
ELSE IF M>2 THEN M=M-2
5050 PRINT MID$("AS",M,1);
: CY$=STRING$(NF,"N")
5060 FOR IX=1 TO NF
: X$="N"
: IF RIGHT$(FL$(IX),2)="CO" THEN
5080
ELSE IF M=1 THEN X$="Y"
: GOTO 5080
5070 PRINT @280,CL$;"Copy ";FL$(IX);
: GOSUB 56000
5080 MID$(CY$,IX,1)=X$
: IF X$="Y" THEN X$=RV$
: GOSUB 52000
5090 NEXT IX
5100 PRINT @280,CF$;"Pause before
copy";
: GOSUB 56000
: P=(X$="Y")

```

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```

5110 X$="to begin BACKUP."
      GOSUB 55000
      PRINT @280,CF$;
5120 PRINT @0,CF$;"Copying marked
      files to cassette:";
5130 L=15000
      GOSUB 5700
5140 FOR IX=1 TO NF
      IF FL$(IX)="@.BA" THEN GOSUB
      5400
      MID$(CY$,IX,1)="N"
      IX=NF
5150 NEXT IX
      L=2000
      GOSUB 5700
5160 PRINT @280,CF$;"Writing [DIR]
      file to cassette.";
      OPEN "CAS:[DIR]" FOR OUTPUT AS
      2
5170 PRINT #2,"Backup as of ";DATE$
      FOR IX=1 TO NF
5180 IF MID$(CY$,IX,1)="X" THEN GOSUB
      54000
      PRINT #2,FL$(IX);",";LN
5190 NEXT IX
      CLOSE
5200 FOR IX=1 TO NF
      IF MID$(CY$,IX,1)="N" THEN 5300
5210 IF P THEN X$="to copy next file."
      GOSUB 55000
5220 GOSUB 5400
5300 NEXT IX
5310 PRINT @0,CL$;"RAM file BACKUP
      complete."
5320 X$="for menu."
      GOSUB 55000
5330 GOSUB 51000
      IX=1
      X$=RV$
      GOSUB 52000
5340 RETURN
5400 X=INSTR(FL$(IX),".")
      FL$=LEFT$(FL$(IX),X-1)
      FX$=MID$(FL$(IX),X+1)
      GOSUB 54000
5410 PRINT @280,CF$;"Copying: ";
      FL$(IX);" Size:";LN;
      L=2000
      GOSUB 5700
5420 IF FX$="BA" THEN GOSUB 5600
      ELSE GOSUB 5500
5430 PRINT @40,CF$;
      RETURN
5500 OPEN FL$(IX) FOR INPUT AS 1
      OPEN "CAS:"+FL$ FOR OUTPUT AS 2
5510 LN=LN-1

```

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```

: GOSUB 57000
: CLOSE
: RETURN
5600 PRINT @40,""
: X$="POKEAD!,B:POKEAD!+1,
T:RETURN"+CHR$(13)
: GOSUB 53000
5610 AD!=63100
: B=PEEK(AD!)
: T=PEEK(AD!+1)
5620 X!=FL!(IX)
: POKE AD!+1,INT(X!/256)
: POKE AD!,X!-PEEK(AD!+1)*256
: CSAVE FL$
5700 MOTOR ON
: FOR I=1 TO L
: NEXT I
: MOTOR OFF
: RETURN
6000 'F6 - Name change
6010 KEY OFF
6020 PRINT @240,CL$;
: LINE INPUT "New file name: ";X$
6030 FOR T=1 TO LEN(X$)
: X=ASC(MID$(X$,I,1))
: IF X>96 AND X<123 THEN MID$(X$,
I,1)=CHR$(X-32)
6050 NEXT I
6060 IF INSTR(X$,".")=0 THEN X$=

```

```

X$+RIGHT$(FL$(IX),3)
6070 NAME FL$(IX) AS X$
: FL$(IX)=X$
: X$=RV$
: GOSUB 52000
: PRINT @240,CL$;
6080 X$=""
: RETURN
7000 'F7 - Kill a file
7010 KEY OFF
7020 BEEP
: PRINT @240,CL$;"OK to kill ";
FL$(IX);
: GOSUB 56000
7030 IF X$="N" THEN PRINT @240,CL$;
: RETURN
7040 PRINT @240,CL$;"Killing ";FL$(IX);
: PRINT @0,"";
7050 IF RIGHT$(FL$(IX),2)="BA" THEN X$=
"RUN"+CHR$(13)
: GOSUB 53000
7100 KILL FL$(IX)
: GOSUB 50000
: GOSUB 51000
: IX=1
: X$=RV$
: GOSUB 52000
: X$=""
: RETURN

```

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# FUNKEY STUFF

```

8000 'F8 - Menu
8010 MENU
9000 'DO file error trap
9010 PRINT @240,CL$;"The file must be
      a .DO file!";
9020 BEEP
      : RETURN
9900 'General error trap
9910 CLS
      : PRINT "**** Error trap taken!
      ****"
      : PRINT
9920 X=ERR
      : IF X>22 THEN X=X-27
9930 X=(X-1)*2+796
      : PRINT CHR$(PEEK(X));C
      HR$(PEEK(X+1));" error in line";
      ERL
      : PRINT
9940 X$="to restart."
      : GOSUB 55000
      : RUN
50000 'Read RAM Directory
50010 NF=0
      : FOR X=-1694 TO -1441 STEP 11
50020 IF PEEK(X)<128 THEN 50090
50030 IF (PEEK(X) AND 24)>0 THEN 50090
50040 NF=NF+1
      : ADI=PEEK(X+1)+PEEK(X+2)*256
      : P=NF
      : IF P=1 THEN 50060
50050 P=P-1
      : IF ADI<FL!(P) THEN FL!(P+1)=
      FL!(P)
      : FL$(P+1)=FL$(P)
      : GOTO 50050
      ELSE P=P+1
50060 FL!(P)=ADI
      : X$=" "
      : FOR L=9 TO 10
      : MID$(X$,L-7,1)=CHR$(PEEK(X+L))
      : NEXT L
      : L=8
50070 IF PEEK(X+L)=32 THEN L=L-1
      : GOTO 50070
50080 X$=STRING$(L-2,32)+X$
      : FOR I=3 TO L
      : MID$(X$,I-2,1)=CHR$(PEEK(X+I))
      : NEXT I
      : FL$(P)=X$
50090 NEXT
50100 FL!(NF+1)=PEEK(64434)+PE
      EK(64435)*256
      : PB!=PEEK(63909)+PEEK(63910)*256
50110 IF NF>0 THEN RETURN
50120 CLS
      : BEEP
      : PRINT @176,"NO FILES"
50130 X$="for Menu."
      : GOSUB 55000
      : MENU
51000 'Display directory
51010 CLS
      : PRINT DATE$ ;" ";DAY$ ;" ";
      TIME$ ;
51020 XI=HIMEM -FL!(NF+1)-(MAX FILES
      +1)*267-16
51030 PRINT "Free:";XI;
51040 L=1
      : FOR I=1 TO NF
      : PRINT @L+40,FL$(I);
      : L=L+10
      : NEXT I
51050 SCREEN 0,0
      : PRINT @280,"Size List Memo
      Copy Bkup Name Kill Menu";
51060 RETURN
52000 'Highlight selected file
52010 FL$=" "+FL$(IX)+SPACE$(9
      -LEN(FL$(IX)))
52020 PRINT @(IX-1)*10+40,X$;FL$;NV$;
52030 RETURN
53000 'Keyboard simulation subroutine
53001 ' Input: X$ contains keyboard
      entries to be simulated.
53002 '
53010 X$=LEFT$(X$,32)
      : FOR I=1 TO LEN(X$)
53020 XI=(I-1)*2+65451
      : POKE XI,ASC(MID$(X$,I,1))
      : POKE XI+1,0
53030 NEXT I
      : POKE 65450,LEN(X$)
53040 RETURN
54000 'Calculate length of file
54010 XI=FL!(IX+1)
      : IF FL!(IX)<PB! AND PB!<XI THEN
      XI=PB!
54020 LN=XI-FL!(IX)
      : RETURN
55000 'Wait for <ENTER>
55010 PRINT @280,CL$;"Push <ENTER> ";X$;
      : BEEP
55020 IF INPUT $(1)<>CHR$(13) THEN 55020
55030 RETURN
56000 'Get Y/N response
56010 PRINT " (Y/N)? < >";
      : PRINT @CSRLIN *40+POS(0)-2,"";
56020 X$=INPUT $(1)
      : X=INSTR("YNyn",X$)
      : IF X=0 THEN 56020
      ELSE IF X>2 THEN X=X-2
56030 X$=MID$("YN",X,1)
      : PRINT X$;
      : RETURN
57000 'Copy a file by blocks of 255
57010 B=FIX(LN/255)
      : LN=LN-B*255
      : IF B=0 THEN 57030
57020 FOR I=1 TO B
      : PRINT #2,INPUT $(255,1);
      : NEXT I
57030 IF LN>0 THEN PRINT #2,INPUT $(LN,
      1);
57040 RETURN

```



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# REVIEWS



## ALASKAN ROM NEAT DEVICE FOR NOVICE AND PRO

### Option ROM

Polar Engineering and Consulting  
P.O. Box 7188  
Nikishka, AK 99635  
907-776-5529  
\$79.95

By CARL OPPEDAHL

**T**he option ROM by Polar Engineering and Consulting Company is pretty neat. For the novice, it provides file compare-and-copy utilities, an improved file directory giving file sizes, a global text search-and-replace capability, and renumbering of Basic programs. For the sophisticated user, it provides an assembler, a debugger-emulator with breakpoints, a disassembler, and additional ROM subroutines.

All of these features come to you with no loss of RAM, no loss of ROM, and no need to load from cassette to disk. How do they do it? By taking advantage of the as-yet-unexploited option ROM socket, M11, in the bottom panel of the 100.

**INSTALLATION.** Installation is pretty easy and takes 10 minutes, if all goes well. You remove the bottom cover, unwrap the option ROM, and pop it into place. It's physically possible to put it in upside-down, so one must be careful about orientation.

The option ROM is a standard 8K EPROM, while the pins of socket M11 are laid out to serve a 32K ROM. Thus, the EPROM is surrounded by a delicate flexible printed circuit board that rearranges the pin connections accordingly.

With a single Basic command line ("CALL911 'FILES'") you can list all visible user files and their sizes. The displayed

information may extend beyond one screenful, so it's fortunate control-S may be used to freeze the display. (The use of control-S isn't disclosed in the manual.) It's too bad Polar didn't write the routine to show the sizes of invisible files.

**UTILITIES.** A utility is provided to make a copy in RAM of a document file that's already in RAM. This isn't as big an accomplishment as it sounds, since, unless memory is tight, one may do the same thing with select, copy, and paste.

A utility is provided to compare two document files to see whether they're identical. If they're not, it indicates how many characters were found to be equal. Though it'd take up more memory and run more slowly, the same thing could be done with a two-line Basic program.

Global search-and-replace is an example of a utility function that can't easily be done in Basic. By specifying a document file name, a search pattern, and a replacement pattern, one may change all occurrences of the search pattern to a replacement pattern.

This can be very handy. If a name has been misspelled several times in a document, the misspellings may be corrected in one easy step. If a long word will appear many times in an article, one may use an abbreviation during the initial typing, and substitute the long word later.

The renumbering utility is fast and easy to use. The range of lines to be renumbered and the new starting line and increment may all be specified.

One nice option is you may use comment (REM) lines to signal the renumbering routine to renumber the program in blocks. An error-handling routine, for instance, could start with line 20000 and a comment. Then, in renumbering, that block would again start with line 20000.

**ASSEMBLER.** A good two-pass assembler is provided. A listing may be sent to the screen, the printer, or may be omitted. (No provision, unfortunately, is made for storage of a listing in a RAM file.)

The assembler takes as input a RAM document file (it won't take input from cassette or any other source) and generates a machine-language program in memory between HIMEM and MAXRAM. It's then an easy matter to save the program as a command file.

**DEBUGGER.** The ROM provides a well-designed debugger with breakpoints, emulation, and other usual debug capabilities. Because of the small screen size of the 100, there's a natural limit to the amount displayed. A typical display appears in exhibit 1.

Each debug display shows the following (all values are displayed in hexadecimal):

- The memory address currently pointed to;
- A disassembly of the opcode at that address;
- The CPU flag conditions;
- The stack pointer and contents of the byte pointed to;

```
PolarEngr & Cons (C) 1984
FD8C CALL FAA5 NZ NC PO P SP=F160.1E20
A=03 BC=0000.C8 DE=0000.64 HL=0850.09
DBG>
```

*Exhibit 1. Debug Display.*





- The accumulator contents; and
- The 16-bit contents and byte pointed to for the BC, DE, and HL registers.

This is the only 100 debugger known to this reviewer, and it does a fine job.

**DISKS AND KEYS.** The manual makes no mention of the Disk-Video Interface, so if you have in mind using the Polar ROM with the DVI, you'd better contact Polar first. As mentioned, it isn't possible to load the Polar ROM software to cassette or disk.

Address lines A13 and A14 go nowhere, so the option ROM appears four times in address space, starting at 0H, 2000H, 4000H, and 6000H. Thus, assembly programmers only have 8K of meaningful ROM available when the option ROM has been selected.

Polar provides some 57 ROM subroutines within the option ROM for RAM-based assembly-language programs. As mentioned in the sidebar, it's a dangerous practice simply to bank-switch over to the option ROM. Polar has thoughtfully provided a routine in high RAM allowing simple access to the added subroutines. The routine switches in the option ROM, executes the subroutine, and switches back the standard ROM, all without running afoul of interrupts.

When the option ROM is in use, keyboard scanning takes place just as it does in Basic. As a result, pushing one of the function keys, or the paste key, provides keyboard input to the option ROM keyboard prompt just as if keys had been pushed. For example, assuming it hasn't been redefined, the F8 key will input the word menu; the option ROM software is set up so the result is a return to the main menu.

**DOCUMENTATION.** The 34-page manual has a good table of contents, an index, and an option ROM subroutine cross-reference. Explanations of most functions are clear and illustrated by example.

The one striking exception is the discussion of the debugger, which this reviewer found to be obtuse. The display format, oddly, is never explained, nor is it made clear when program execu-

tion is going to take place with the standard or the option ROM.

The ROM provides help messages listing the commands available at various points so after a while, the manual isn't needed. The manual doesn't mention the option ROM requires a free directory file name for temporary storage. If all file names are occupied, the option ROM won't work.

**LOSS OF FILES.** Any 100 owner who plays with CALLS, POKES, or assembly language sooner or later experiences the sickening feeling that accompanies the destruction of all user files. (One such experience is usually enough to prompt the good habit of making frequent backups.)

Anyone using the advanced features of the Polar ROM, such as the debugger or assembler, runs a similar risk of such loss through carelessness in writing and debugging programs. The manual is very responsible about this. Two warnings appear in appropriate places reminding the user of the necessity of frequent backups.

**DELIGHTS AND DRAWBACKS.** There are many benefits to distribution of software by means of an option ROM. The user doesn't need to load the software from tape to use it, and needn't give up precious RAM space to store it. There's no competition with other assembly-language programs for that popular area between HIMEM and MAXRAM. And for the publisher of the ROM, there's the happy knowledge that there are very few pirated copies of the software in use.

There are, however, disadvantages. There's no way to install both the Polar ROM and another option ROM, such as the rumored Radio Shack spreadsheet ROM. If one selects at a later time to buy a different option ROM, there'll be no way to load the Polar software to cassette tape or disk.

The Polar ROM is a delightful option for the novice or sophisticated user. It provides a much-needed debugger and machine-language assembler, as well as a variety of handy utilities. ◀

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## ACCESSING THE OPTION ROM

There are three basic methods of access to an option ROM: menu selection; calls to the standard ROM; and direct bank-switching via output port E8H.

When the 100 is powered up or reset, it executes machine-language instructions contained in the standard ROM, regardless of which ROM was being previously used.

The start-up routine in the standard ROM includes a test to see if addresses 40 and 41H of the option ROM contain 54 and 43H respectively. If they do, an additional menu file-listing is put in the directory from addresses 42H to 47H of the bottom ROM, and a flag at F62AH (63018 decimal) is set to indicate the option ROM file name has been loaded.

At the main menu, selection of the file name allows easy access to the option ROM. (The Polar ROM doesn't take advantage of the menu-display capability.)

Within Basic, the easiest way to gain access to an option ROM is by way of CALL 910 (38EH) or CALL 911 (38FH), which uses the code in listing 1 to boot up the option ROM.

This ROM routine transfers control to the option ROM regardless of whether the ROM passed the power-on test described above. The only requirement is the option ROM must have been designed to respond properly to a boot up from 00H.

The Polar ROM uses this means of access: It's set up so when execution begins at option ROM address 00H, with 01H in the accumulator, the option ROM prompt CMD> appears on the screen.

The Polar ROM, when booted up from 00H, also checks to see whether the Basic CALL 911 was used. If it was, then any comment appearing in the command line is treated as input by the option ROM. Thus the line CALL 911 'DBG goes directly to the debugger.

The Polar ROM is set up with one other method of entry. A boot up from 00H with 129 decimal in the accumulator will set up a fancy calling routine in high memory, which may later be called from Basic. The fancy calling routine allows direct access to the CPU internal registers through Basic integer variables.

```
038E DI
038F LD A,01 'turn on bit zero
0391 OUT E8 'select option ROM
0393 RST 0 'start executing at 00H
```

*Program Listing 1. ROM Boot.*

The call to 911, or its machine-language equivalent, will work only if the option ROM installed was specifically designed for such access. (As mentioned above, the Polar ROM is so designed.) One obvious requirement is it must be set up so it works when booted up from 00H. In addition, though, there must be a provision for interrupts, which cause subroutine calls to particular locations in the ROM area.

The timing-pulse interrupt, for example, is almost always enabled to allow keyboard scanning. In the standard ROM, instructions are provided at certain addresses to handle that interrupt.

Unless the option ROM has appropriate instructions at those same locations, the selection of the option ROM will have unpredictable results when the interrupt comes in. (The Polar ROM is designed to handle interrupts.)

A final way of gaining access to the option ROM is by means of directly controlled bank-switching. One simply turns on bit zero of output port E8. This hardware-level process transfers control to the option ROM regardless of whether the ROM passed the power-on test described above.

It's tempting to consider doing this from Basic, since the Microsoft Basic provided with the 100 contains a command allowing one to send a byte to an output port. For example, bit one of output port E8 may be turned on by means of the command OUT 232,1.

If one were to type this, the option ROM would be bank-switched in place of the standard ROM, just as one would expect. The CPU, previously executing, say, standard ROM code at 3456H, would continue execution. The problem is that the memory locations after 3456H would contain option ROM values, rather than standard ROM values. In general the system would crash.

Thus, hardware-level bank-switching should only be done in machine language, and then only very carefully.

—Carl Oppedahl



## EXPLOR GIVES USER ABILITY TO PEEK AT ROM

### Explor

Griffith Computer Consultants Inc.  
P.O. Box 8618A  
Orlando, FL 32856  
305-897-2081  
\$22.95

By CARL OPPEDAHN

One of the first things a computer owner usually does is search through his or her computer's ROM (read-only memory) to guess how it works. The PEEK command may be used, but it is slow and laborious.

Later, as the owner becomes more sophisticated, he or she wants to try POKEing values into memory to do things not easily done in Basic. That, too, is tedious.

When the time comes to try writing a machine-language program, one really must buy or write a utility to do all things easily and predictably.

Explor is such a program. It can display and step through blocks of memory, modify memory, search memory for a particular string, convert between hexadecimal and decimal, and per-

form hexadecimal addition and subtraction.

The display of memory may be sent to a printer if one is attached.

**DOCUMENTATION.** Explor is shipped on a non-copy-protected cassette with a 10-page user's manual. The manual describes each of the functions clearly, although the program is so simple to use the manual is rarely needed.

What the manual does not do (except by a single example) is explain why an owner would want to explore the memory or how to interpret what's seen there. The assumption is the owner already knows what to do with the program before buying it.

One glaring deficiency in the manual is the lack of a prominent warning about the great dangers of modifying memory. Perhaps this will be corrected in future versions.

**COMPARABLE PROGRAM.** Explor is much like the program Debug which appeared in the October 1983 issue of *TRS-80 Microcomputer News*; table 1 gives a comparison of the two programs.

As you can see, the programs have many features in common. The most prominent feature Explor has over Debug is the search command. Explor



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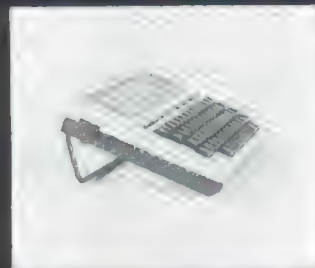
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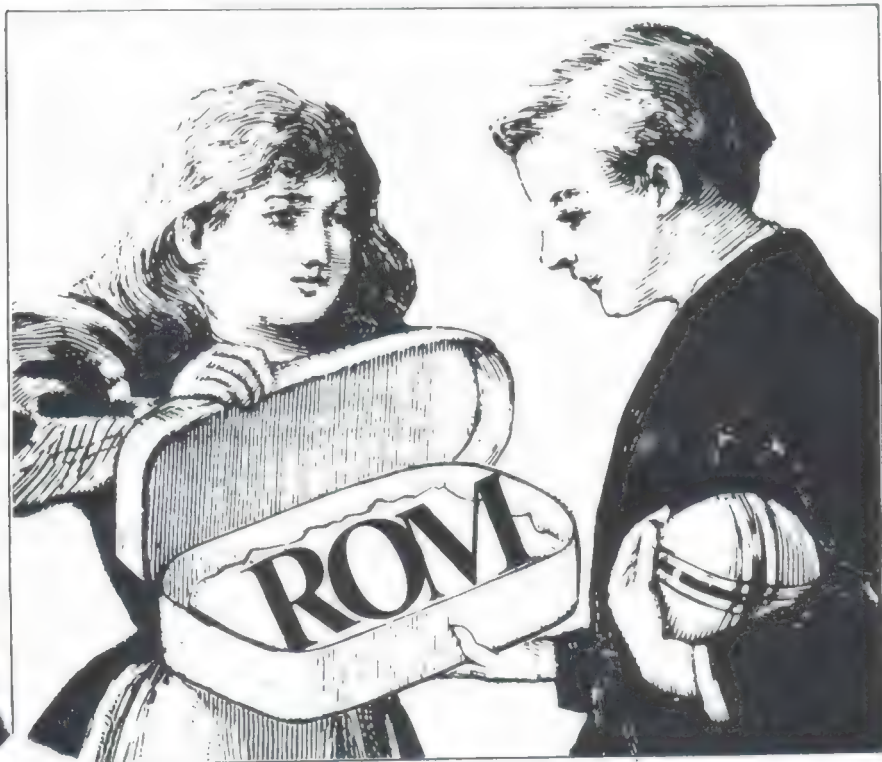
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Language	Basic/Machine	Basic
Size (bytes)	4629	2286
Display Block	Yes (R)	Yes (V)
Next Block	Yes (N)	Yes (N)
Previous Block	Yes (P)	Yes (P)
Display to LPT	No	Yes (S)
Dump to Printer	Yes (P)	Yes (H)
Cursor Control	No	Yes
Modify Memory	Yes (I)	Yes
Dec./Hex Conversion	Yes	No
Search Memory	Yes	No
Valid Inputs	Dec/Hex	Hex

*Table 1. Comparison of Explor and Debug.*

can search for a byte, or sequence of bytes, through all of memory. It uses a machine-language routine to do the time-consuming part of the search, and returns to Basic to handle the match. The search is quite fast—a search of all 64K of memory takes about 15 seconds.

The search is not, however, an "opcode" search. For example, if one is searching for, say, all the times a jump takes place to F5F0, one would look for the sequence C3 F0 F5. Explor simply

looks for that sequence and stops when the three-byte match occurs. But the C3 found by Explor may be the second byte in a two-byte opcode—in other words, it may not be a true "jump" opcode. A more sophisticated program would announce an opcode match only if the C3 were not part of a previous opcode.

**DEBUGGERS.** Neither program is a true debugger. When writing a ma-

chine-language program, a user often wants to run part of the program, stopping part way through (using so-called "breakpoints") as an aid to debugging the program. The user wants to display CPU register contents. Neither program will do these things.

In the final analysis, Explor does what the publisher says it will do. It is easy to learn and easy to use. At \$22.95, it is a good buy for curious Model 100 owners. ◀

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software releases for the Model 100. It's fairly simple to use, and I think many owners of the machine will have a need for the sort of analyses it performs: descriptive statistics, histogram and frequency distribution, correlation and regression, time series analysis, multiple regression, and one- and two-way analyses of variance. At the same time, the prospective user should be aware of some limitations on the usefulness of these programs as implemented in this particular product. I'll try to touch on both the high and low spots in this review.

**CLASSY PACKAGE.** The brown and gold padded vinyl slipcase contains two cassettes with four programs each, a 42-page manual, and two 8-page quick reference guides: one for statistical analysis, and another pertaining to the use of any applications software.

The Statistical Analysis package consists of a master menu-data utility routine and seven analysis programs. Since the whole thing requires more than 19K of storage, I suspect many users will quickly settle for keeping just their favorite routines in RAM, leaving the less-frequently-used remainder on cassette.

Before discussing the various routines, I'd like to mention the data files to be analyzed must be created with TEXT in a separate step; there's no option for editing data from within Statistical Analysis itself. You'll have to refer to an appendix in the manual to get all the details, but in brief, each record is entered as a single line, the individual fields being separated by commas. There may be alphabetic fields in the data file, but of course these programs only deal with numeric variables — and a maximum of four of them at a time.

**THE MASTER.** The Data Format Utility, STAT, is a 2860-byte master utility present at all times. All of Statistical Analysis' operations begin by placing the 100's cursor on STAT.BA. The routine's main menu is used to select the statistics program needed for an analysis, using the computer's function keys. First, though, there's a process of format definition to be attended to. The F1 key is used to select the data utility option for this purpose.

There are two major options: Prepare new format and check stored format. To repeat, the former has nothing to do with actually setting up a data file. Instead, it refers to the process of informing Statistical Analysis about the structure of an existing file established with TEXT. The machine requests the name of the file to be used (.DO extension assumed), the name to be assigned to each numeric variable that'll be used, and the field position of each. This is only the ordinal number of the field within the data file. The data utility sets up a short file, SAFM.DO, in which this format information is stored.

The documentation to the contrary, you need not furnish any information about the lengths of the various fields. Instead, specify, for instance, the third field as field position 3, and never mind how long fields 1 and 2 are. In fact, corresponding fields in different records don't need to be the same length; they must be in the same order, though, and mustn't begin with a blank character.

The check option is used to review the current data format. Once you have the format you want, you can return to the main menu and select an analysis routine.

**BREAD AND BUTTER.** The Descriptive Statistics Routine, SADS, has 926 bytes

and gives you an overview of any one variable in your data set. It calculates and displays:

- The number of records;
- The sum and mean of the values of the chosen variable;
- The sum of the squared deviations about the mean;
- The variance (mean squared deviation);
- The actual standard deviation and an estimate of population standard deviation if the data were a random sample;
- The standard mean's error; and
- The smallest and largest data values in the file.

All the routines in the system are written in Basic. From a quick look at the code, I'd say they're all written in full double-precision form. This may be necessary to preserve accuracy in some of the calculations, but it does slow things down. I tested most aspects of Statistical Analysis with some time-and-charge information from telephone bills; the Descriptive Statistics routine took a little over 18 seconds to do its thing on a 34-member data set.

One annoying thing shows up when SADS asks you to identify the variable to be analyzed. You do so by entering the field position number of the variable in question, but the program doesn't display your choice; it just takes off to do its calculations. As an old Basic programmer, I'd say the INKEY\$ function is being used to read the keyboard, and I wish input statements had been used instead. It'd be nice to have the opportunity to correct an operator error without waiting for the whole analysis to be performed.

**VARIABLE CHECK.** SAFR, the Histo-

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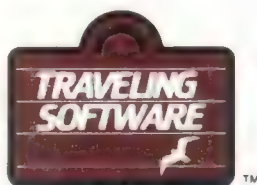
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gram-Frequency Distribution Option is 1774 bytes in length. This routine allows you to examine the distribution in values of any variable in your data set. Both tabular and graphical outputs are available, and you can specify the number of *bins* or intervals into which the distribution is to be divided — from one to six. But beware: there's less flexibility in the routine than you might like, and the histograms aren't quantitatively correct.

In my tests, I instructed SAFR to chomp away at my telephone bill data and produce an analysis of the charges per call. After 12 seconds, it informed me of the number of records in the file, the minimum, maximum, and range. For the record, the last three figures were 0.13, 1.51, and 1.38 respectively. The program then requested the number of intervals (1 to 6 allowed) for the frequency-distribution analysis. I selected 6, and another 10 seconds were required to finish the calculations.

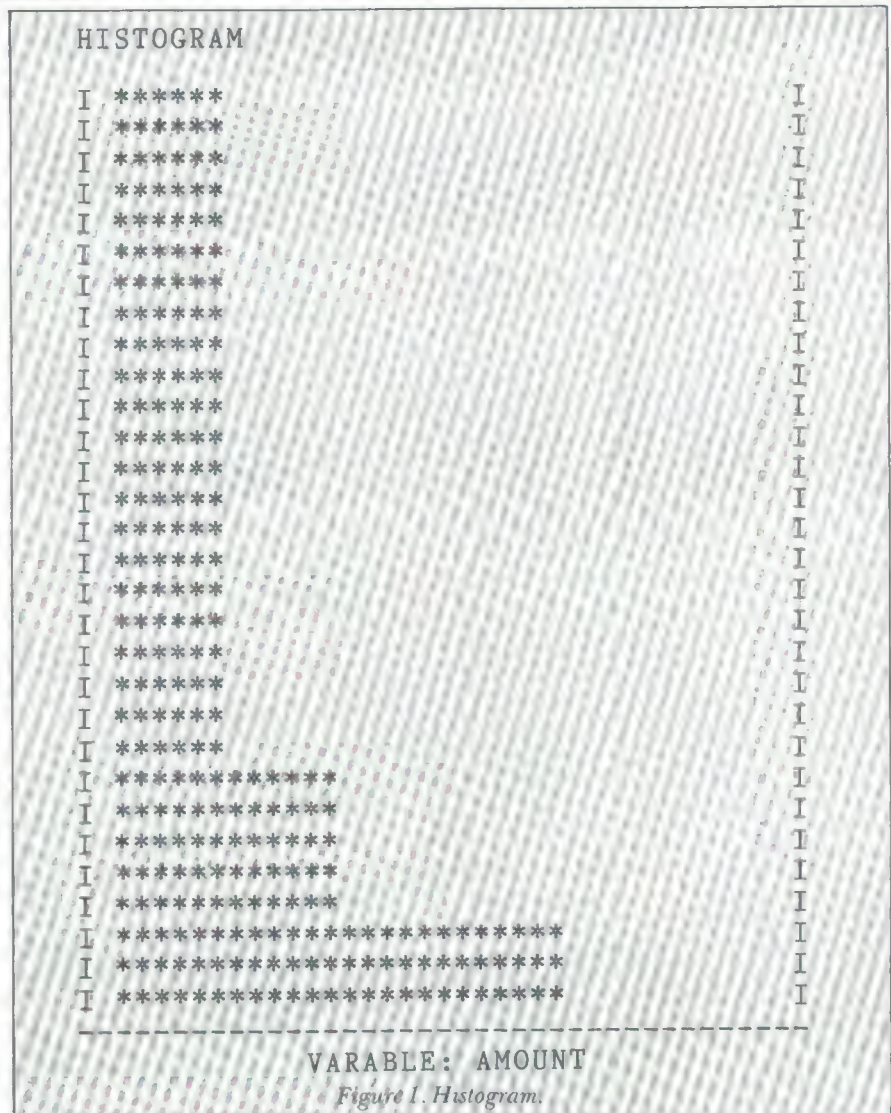
The new display is shown in table 1. It does give a six-bin distribution, but

BIN #	COMPUTED FREQUENCY	HEIGHT OF BAR
1	24	29
2	6	8
3	2	3
4	2	3
5	0	0
6	0	0

*Table 1. Tabular Output of Frequency Distribution.*

notice how awkward the intervals are. They begin at the lowest value in the data set and end at an equally strange place. Incidentally, the upper limit remained 2.51 when I asked for 5-, 4-, and 3-interval analyses. I can understand the author of a frequency-distribution routine has an easier job when he assumes the first interval start with an actual data value, but I think SAFR suffers for it. Surely intervals of 0-0.3, 0.3-0.6, 0.6-0.9 would have been more reasonable for this example. Good auto-scaling routines are available for this sort of thing.

**PUSH-KEY GRAPHICS.** With the numerical data in hand, you can call for a histogram on the 100's screen. You also can get a hard copy of the figure by pressing the P key after it's drawn, assuming you've a printer that acts like a Radio Shack machine. (My Prowriter had no problems.) This is the nicest feature of all Statistical Analysis rou-



times that have graphical displays; the computer's print key doesn't normally give you graphics output, of course.

However, there are problems: the displays aren't especially accurate. The LCD image lacks labels for the axes, which is forgivable given the limited screen size. Unfortunately, the scaling is rather strange. My impression, based on all the trial data sets I used, is that the largest bar in the histogram always ends up occupying the full height of

the screen. There always seems to be 19 tic marks along the vertical axis, too, suggesting a high degree of accuracy. But, it just isn't so.

The problems become more apparent when you call for the hard copy. This is nicely enlarged, and shouldn't suffer from the problems of limited resolution which plague the LCD. Unfortunately, if you compare table 1 and figure 1, you'll see the histogram for my data set doesn't match the calculations;

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*Table 2. Computed Frequencies.*



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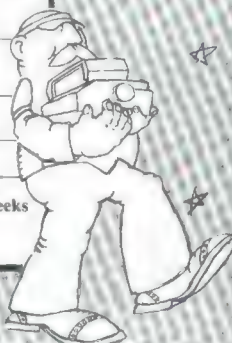
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## REVIEWS

the heights of the bars don't scale with the computed frequencies in table 2.

Something is amiss, and it doesn't seem to arise from the use of standard line-of-text spacing and print characters to represent graphics. The SAFR histograms give a qualitatively correct impression of the data, but for critical work, the user would be well-advised to stick to the tabular results.

**TABLES AND GRAPHS.** SACR, the Correlation and Regression Routine, is a big routine. At 3299 bytes long, it's used for analyzing possible relationships between any two variables in a data set. Once again, both tabular and graphical outputs are available. Computed quantities include:

- Means and estimated population standard deviations for each variable;
- The correlation coefficient;
- The t-test for differences in the variable means, and the degrees of freedom for the t-test; and
- An estimate of exact two-tailed probability for the t-test.

Graphical output consists of a scattergram, with or without the computed regression line, for one variable of the pair plotted against the other. The slope, y-intercept, and standard error of prediction are displayed. The hard copy also contains information about which variable is which, and what its respective ranges are.

Once the regression model has been computed, you can obtain predicted values for the dependent variable by entering figures for the independent one.

One comment: the hard copy version of the scattergram didn't display individual data points when run on my system; only the axes, regression line, and text showed up.

**TIME FACTOR.** Time Series Analysis, or SATS, is another routine having both tabular and scattergram output formats. It requires 2793 bytes of storage and is similar to SACR in operation. Here, though, time is considered as the independent variable and it's assumed that observations on the dependent variable have been made at equal time intervals.

Tabulated results include the mean and estimated population standard deviation for the dependent variable, the correlation coefficient for observations versus time, and the percentage of vari-

ation in the dependent variable which is accounted for by the least squares regression. Once again, predictions can be made. The origin is the first observation in your data set, and you're asked to input a value for the independent variable relative to that origin.

**COMPANION.** SAMR, the Multiple Regression Program, goes hand-in-hand with SACR. The 2003-byte SAMR is used to test for possible dependence of a dependent variable, called Y, on two independent variables, or predictors, labeled X1 and X2. The available outputs include:

- Regression and residual sums of squares;
- Coefficient of determination;
- Standard error of estimation;
- The coefficients and constant term in the regression equation:  $Y = b_1 * X_1 + b_2 * X_2 + CONST$ ; and
- Tests for regression significance.

There's also a prediction option, in which you enter arbitrary values for the predictors and the 100 computes the corresponding value of Y predicted by the regression equation.

**HYPOTHESIS TESTER.** SAOW and SATW, for Analysis of Variance, perform one- and two-way analyses of variance. They're 2262 and 3468 bytes, respectively.

The analysis of variance procedure tests for significant differences between groups of items in a data set, depending on the values of one or more variables. In other words, it tests the hypothesis that differences in a dependent variable observed for various sample groups result from the way the groups are chosen, rather than from random errors.

To use SAOW, you first identify the dependent variable to be examined, along with the independent variable according to which you wish to group your data. Next, you're prompted for the number of levels, or groups, into which you want to split the data. Your final inputs are the exact values of the independent variable which will signify membership in one level or another.

By the way, this can be a *real* variable, such as a measured quantity, or a simple numerical code for a category. An



example of the latter would be a code of one for females and two for males in a tabulation of survey results.

Once you've entered this information, the 100 does the calculations and presents a table of results: mean squares for the assumed sources of variance, along with the statistician's F-ratio and probability estimate for the main effects. Subsequent screens contain degrees of freedom and sums of squares for the sources of variation and for the dependent variable, and a table of means and standard deviations for each level of the independent variable.

**CELLULAR.** Two-way analysis of variance proceeds in a similar fashion, except that the data are grouped into cells according to the values of two independent variables. (Cells can be pictured as rectangular boxes in some sort of abstract plane whose coordinates are the values of the two variables.) User inputs are the field positions of dependent and independent variables, the number of levels for each of the latter, and the specific values chosen for the various levels.

There are several output screens:

- Squares for the sources of variance;
- F-ratios and probability estimates for main and interaction effects;
- Degrees of freedom and sums of squares for the sources of variation and for the dependent variable; and
- Estimates of the mean and standard deviation for the dependent variable and for each level of each independent variable.

**WINNING POTENTIAL.** The Statistical Analysis package can do a reasonable job on some standard statistical calculations, assuming your data sets aren't so large the computation time becomes unacceptable. Its modest price should help to make it popular. You do have to know your way around conventional textbook statistics to derive the maximum benefit from the system, but it's unreasonable to expect every applications program to be a self-contained tutorial on its subject field.

My principal reservations have to do with the histogram and scattergram routines, as I've already explained. I guess my own graphics orientation is showing, but frankly, I think the qualitative nature of the hard copy is unacceptable. (To be sure, the LCD is suffi-

ciently limited to excuse a certain amount of fudging.) If this were taken care of, and if the frequency-distribution routine were made more flexible, Radio Shack could have a winner. ◀

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By STUART HAWKINSON

While several programs add calculator-style functions to the Model 100, RPN Calculator from Compute/Account also provides a simple way to incorporate them into your own program. This can free your application from digesting complex numeric data. The program uses the RPN (Reverse Polish Notation) found on many scientific calculators while allowing you to see the stack register and memory register contents during a calculation.

**FEATURES.** The calculator program does the normal arithmetic operations  $+,-,*,/$ , and also calculates basic functions  $x^{**}2$ ,  $\text{sqrt}(x)$ ,  $e^{**}x$ ,  $\ln(x)$ ,  $y^{**}x$ ,  $1/x$ , and  $x$ . It displays the working registers, as well as the last  $x$  entered. This makes the RPN Calculator program on the 100 easier to learn than a hand-held scientific calculator.

The program also allows you to use up to 10-memory registers. You can do memory arithmetic operations directly while storing data to these registers. A special display command shows all 10 values stored in memory.

A help command shows two pages of abbreviated command information. These pages serve the same purposes as the markings on a calculator keyboard. The register display can be

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turned off when you want to practice RPN logic or incorporate the calculator input into your own program.

**WELL-DOCUMENTED.** The RPN Calculator program loads readily from cassette and occupies 3258 bytes in a RAM file. The seven-page instruction manual provides a comprehensive description of operation and the keyboard commands are summarized in an appendix. The write-up also includes a short tutorial on using an RPN calculator.

The final page of the instructions gives a summary of the register-stack operations. Diagrams are used to illustrate their operation. The documentation concludes with a list of all the program variables and selected subroutine calls. This information is useful for those who want to incorporate the program into other software.

**MERGING.** Reverse Polish Notation allows you to evaluate complicated expressions without the need for parentheses. You enter numbers followed by the operations to be performed. For example: to calculate the expressions  $2 * (3 + 4)$ , you'd type '3 space 4 + \*'. Most RPN calculators require you to separate the first two numbers with an enter command; the RPN Calculator program uses the space bar instead.

The operations to be performed are designated with various keys, compatible with the numeric keypad (activated with the NUM key). Several operations that commonly require the use of the shift key have lowercase alternatives. Multiplication (\*) also can be keyed with ; and addition + can be done with P. All of the letter codes, including help H must be struck using the shift key or with the caps/lock key depressed. This is especially frustrating for the beginner, when nothing seems to work until the shift key is depressed.

If you choose to merge RPN Calculator with another program, you can use calculator functions during data input. For example, if you need to input an average figure for some application, you'd add all the values, divide by their number, hit enter, and the average value would be transferred to the program. The instructions show how to modify your program to take advantage of the RPN Calculator.

If you decide to incorporate RPN Calculator into a commercial program, you'll have to negotiate a license with



Compute/Account. Royalty payments are based on the amount of code used per unit sold.

**PLUS AND MINUS.** RPN Calculator works well in its limited capacity as a calculator substitute. Its best features are the visible registers and memories. It even has a *last x* display. This allows you to recover from an incorrectly typed operation by recalling the last *x* value entered.

But the calculator program has a few undesirable features as well. If you try to perform an invalid operation (such as divide by zero or a negative square root) the program does nothing. No beeps, no warning message, nothing! In addition, the program doesn't trap arithmetic overflow, so some calculations are abnormally terminated without the ability to correct a possible keyboard error.

**SHORTCOMINGS.** The keyboard-input routine allows you to enter numbers with multiple decimal points and overflow the display with meaningless digits. There's no control over the number of significant digits displayed. This causes the display of memory registers to be completely garbled for numbers with more than 15 digits.

A serious flaw allows you to enter partial numbers via the store command. The program doesn't implicitly do an enter operation when the store key is pressed. This is an essential feature of any RPN calculator. The program can be patched by adding  $LF=1$  in line 5142, just before GOTO5062.

The instructions fail to mention how to enter very small numbers (with negative exponents) in scientific notation. You must use the change sign key to accomplish this. The instructions also fail to mention the program's limitation of the argument (48 maximum) to the factorial function. Just as bad are the unlimited arguments for functions like  $e^{**x}$  and  $y^{**x}$ , which are allowed to produce overflow errors.

**FOR GENERAL USE.** Despite the limitations mentioned above, RPN Calculator serves as a good basic calculator for the 100. Its main utility is to provide simple calculations for the general user. But without extended features such as trigonometry functions, logs, exponents, and arithmetic to other bases, the program can't replace a scientific or engineering calculator. ◀

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PS: You won't be happy with this complex program if your machine has less than 24K. But, we intend to produce a ROM version soon! Watch this space, but don't hold your breath — full trade-in on the cassette version will be given. By the way, you can change the name of the program once it's loaded if you don't like it!

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# FULL-DUPLEX

TERRY KEPNER



*Editor's Note: Full-Duplex is dedicated to solving reader's Model 100 problems. Readers needing assistance should address their letters to: Terry Kepner, c/o Portable 100, 15 Elm St., Camden, ME 04843. Readers are reminded to include a return address with all Full-Duplex correspondence.*

## NEC QUERIES ANSWERED

I opted for the NEC PC 8201, but find the NEC documentation is so poor that the following questions have come up:

- During LIST, how can scrolling be stopped after every seventh or eighth line so that there is time to read it? The stop command doesn't seem to work during LIST;
- Is the Basic dialect used on the Radio Shack Model 100 different than the N82 Basic? Would any of the books written for the 100 be useful for the NEC (in view of the poor documentation)?;
- Is there a bulletin board or users group for the NEC-8201A?; and
- Since the N82 Basic doesn't have DEF FN statement, is there an alternative way to duplicate this?

Ronald Kallen, MD  
Cleveland Heights, OH

► First, you can't stop a listing exactly every seventh or eighth line, but you can get the listing to pause (temporarily stop) by pressing control-S. The problem with this is the results are haphazard; if your timing is off, you could miss a couple of lines. A simple method is to move the entire program into the edit buffer and use the shift-up-arrow and shift-down-arrow to "page" the display.

Second, there're only four major differences between the two computers: the NEC uses LOCATE x,y instead of PRINT@ for cursor positioning; and the NEC doesn't support DEF FN, MID\$ (string replacement), and

VARPTR. As a result, most books on Model 100 Basic can be used for the NEC 8201A, and vice versa.

The only bulletin board I know of that supports the NEC 8201A is the CompuServe Model 100 Special Interest Group. A good proportion of the members own NEC 8201As, some even own both the NEC and the Model 100 computers. If you have any serious questions, the SIG experts can help.

The simplest method of implementing the DEF FN function is to use a subroutine via GOSUB. This is a kluge method, increasing the program size and requiring a bit of work to make sure the variables and data are properly transferred to and from the subroutine the way DEF FN would treat the variables and data.

## IBM MLS INTERFACE

Our Multiple Listing Service is going on-line with an IBM Series I computer. I asked the technician who will be installing and maintaining the system if my Model 100 could communicate with the MLS system (Offutt Publishing, the company providing the MLS service, sells TI 707s and TI 745s, but neither purchase from them nor use of the TIs is necessary). Enclosed is the letter I received from them which says "the Model 100 cannot 'keep up' with our system . . . we send characters at true baud rate and this model subsequently drops characters."

My local Radio Shack people have used the Model 100 to communicate with almost every kind of computer and they don't understand why the 100 is not compatible with the IBM series I.

Is there any way the 100 can be programmed or modified to communicate with the IBM computer? I'm not knowledgeable about what makes the little rascal work, but I have yet to try anything it can't do.

Since our office has a Model II and a Model 12, both of which will communi-

cate with the MLS System, we aren't out in the cold. On the other hand, using the Model 100 would be very convenient.

W. Calvin Reynolds  
High Point, NC

► Looking over the MLS communications specifications you sent me, I see it doesn't mention the baud rate used. I'm sure that's the problem area. I'll bet Offutt Publishing's MLS uses a baud rate greater than 1200, and that they tested the Model 100 using TELCOM.

TELCOM has a practical upper limit of 1200 baud in data transfer, due to its echoing of characters to the liquid crystal display. Because TELCOM waits for the LCD to display each character before it looks for the next RS232 character, it tends to lose characters if your baud rate is over 1200. However, it is capable of up to 19,200 baud using a machine-code telecommunications program, if the program doesn't try to immediately echo each character to the LCD display, waiting instead for a pause in the incoming data stream before displaying.

What you need to do is to find out just what baud rate the MLS system is using, then get a telecommunications program capable of operating at that speed. Since the built-in Model 100 is limited to 300 baud, you may have to get a high speed modem for connecting to the Model 100 RS232 port.

Good luck, and let me know what happens.

## QUICK FIX

I inadvertently, under the TEXT program, I typed the expression KILL "T when the program prompted me for a filename. The expression was then placed in the menu as KILL "T.DO, and I can't remove it no matter what I try! KILL "KILL "T.DO" and NAME don't work. Help!

Sheldon Berger  
[address omitted by sender]



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► The answer is easy, type KILL "KILL"+CHR\$(34)+"T.DO" and your file will be removed from the menu.

### FLIP-FLOP PROMPT

This little program (program listing 1) does exactly what I intended, by purest accident, yet I can't imagine why! Lines 32 and 40 were intended to display a "flip-flop" indicator and were originally part of a loop, with delays built-in. Now there's no loop, but I still get the "flip-flop." Why?

Frank Heaton  
San Diego, CA

► Now that's a nifty discovery! For those of you who haven't typed in the program, it puts a prompt on the display with a question mark. Instead of having the normal "solid block" cursor flashing on the screen, you have two diagonal boxes switching positions (in a two-box-by-two-box grid, lower left and upper right are filled in, then

```

10 REM Well, I'll be a Monkey's
    Uncle!
15 FOR K=1 TO 2
16 IF K=1 THEN W$="FIRST"
17 IF K=2 THEN W$="LAST"
18 CLS
20 PRINT @162,"What is your ";W$;"
    name"
32 PRINT @187,CHR$(229)
40 PRINT @187,CHR$(230)
60 PRINT @185,"";
70 IF K=1 THEN INPUT N1$
72 IF K=2 THEN INPUT N2$
75 NEXT K
90 CLS
100 PRINT @162,"We DID it, didn't we,
    ";N1$;" ";N2$;"?"

```

Program Listing 1. New Cursor.

lower right and upper left are filled in).

You'll be surprised to learn you can dispense with line 40 and still get the "flip-flop" effect. What's happening is 32 puts the first set of diagonal boxes on the display, and line 60 positions the INPUT prompt solid cursor directly on top it. What happens next is

a design effect of the actual cursor display routine: the cursor doesn't erase the character beneath it, it compliments it. As an example, go into TEXT and observe that the cursor, when positioned over a letter, doesn't erase the letter, instead it turns off all the cells of the letter, and turns on the rest of the

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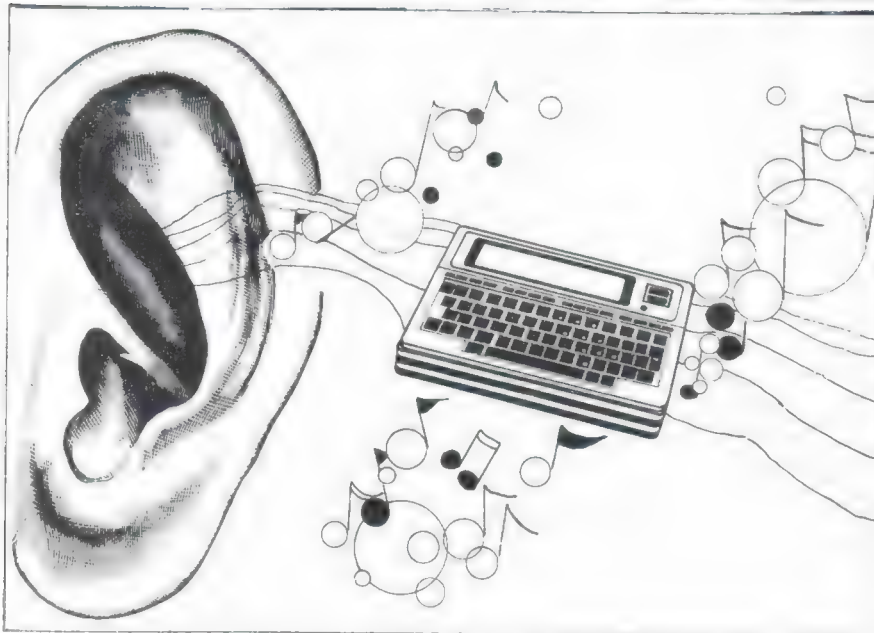
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cells in that block (inverse video display), then restores the letter.

Your program is accidentally using this non-destructive inverse display capability to "apparently" switch the boxes in your "flip-flop," when the cursor is just complimenting the cells in the block and then restoring them.

#### TAP ROM SEARCH

I have written a program that needs to look up data in a .DO file. the program works, but I have one problem. The .DO file search takes 50 or 60 seconds. However, if I use the find command in TEXT, it takes only a second

or two. I would like to use that find command in my program. Tandy says it's a ROM subroutine and that they don't know the address to access it.

Can you help?

Greg Harris  
Maquoketa, IA

► A subroutine for doing what you want to do was published on page 36 of the May issue of *Portable 100*. Lines 1 to 10 of the listing should be ignored. Type in only lines 20 to 340.

#### BUFFERED OUT NO MORE!

In the April issue, Buffered Out seems to have a problem with his 100 and MicroFazer buffer. I had the same problem. The buffer has to be modified to shake hands with the computer so it can load faster. A phone call to MicroFazer helped me make the modification. Three resistors and cutting some foil on the circuit board solved my problem. For a reasonable fee, MicroFazer will do the work if you return the unit to them.

Dan Lichtman  
Northbrook, IL

► Thanks for the information. ◀

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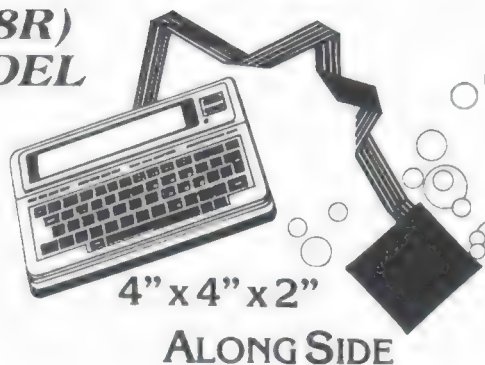
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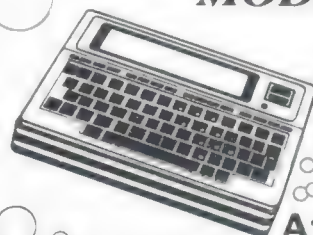


# Special Announcement

**(128R)  
MODEL**



**(128X)  
MODEL**



**1/2" added  
ATTACHED TO  
BOTTOM OF  
MODEL 100**

## MODEL 100 128K BUBBLE MEMORY MODULE

Soundsight is proud to announce its new 128K bubble memory module for the Model 100! The module is available in two models, allowing it to be either attached to the bottom of the Model 100, increasing its overall thickness by approximately half an inch (Model 128X), or set up remotely, along side the 100 in a small package approximately 4" x 4" x 2", requiring the use of a cable (Model 128R). Both AC and DC operation is provided, requiring only a small 12 volt adapter. Rechargeable batteries are also compatible. The memory will be expandable to one megabyte (one million bytes of memory) through the purchase of additional modules, requiring factory installation (Model 128X), or reconfiguration (Model 128R).

This bubble memory module has a non-volatile memory which means the memory will not be lost in the event of loss of power

or dead batteries. It can operate like a hard disk in which vast amounts of data or programs may be quickly stored, downloaded, and then run in the Model 100's 32k RAM. Upon downloading to RAM, the data is not erased from the bubble memory. With the use of simple sub-routines, programs which exceed the Model 100's RAM may be made to operate by sampling between the 100 and the bubble. No more I/O errors or cassettes or disks that won't read, and no more address or note files which take up the majority of RAM preventing the storage of other programs and requiring tedious cassette or disk procedures.

Power consumption is low because the bubble memory is powered up only when it "reads" or "writes" and it performs these functions in less than a second.

Originally developed by Soundsight for

Stevie Wonder's Model 100, this module is especially useful to reporters, programmers needing remote terminals, or anyone finding that they need more memory in order to take full advantage of their investment in the Model 100 and all the software they may have bought but cannot use due to lack of memory.

The two models differ in price and features. The Model 128R sells for \$750.00, while the bottom attachment — Model 128X, sells for \$950.00. The 128X series allows space for the interfacing of additional 128k memory modules and their power requirements.

As certain programming is necessary for operation of the bubble memory module with the Model 100, the software driver sells for \$100.00.

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continued from page 80

**NEVER FEEL SORRY.** Just when I was feeling sorry for this manufacturer (End User Warning: Don't buy a product because you feel sorry for the company!) along comes the manufacturer, who fires a salvo at end-user indifference.

In a letter published in *Portable 100* (June 1984, page 8), the manufacturer got to the point when he, in effect, conceded the accuracy of the reviewer's criticism, but argued the points were trivial when measured against the overall program capability.

I don't know if the manufacturer is correct in his ultimate conclusion, but I wholly agree with his view that the overall program capability should be the issue.

This point was buried inside a harangue. He blasts *Portable 100* as hypocritical for accepting paid advertising for a product which it regards as defective. While the review may have been inadequate, to swing this ax of hypocrisy only reveals the attitude that too many vendors have, that they are owed a favorable review.

I'm not sure vendors are owed anything. It's the readers, the users, which are owed accurate and relevant information, accompanied by honest opinions.

**JOHN WAYNE.** The letter goes on with John Wayne bravado acknowledging minor flaws, refusing to apologize, and declaring, "...we, quite frankly, don't intend to incorporate any changes in our current spreadsheet."

Now there is a certain charm to "We're not going to change a damn thing" when you're used to hearing "We're working on it." Both statements mean the same thing: Programs will continue to resist the impact of user experience.

However small these flaws, why not fix them so that users will have an easier time of it?

I simply don't comprehend the virtue in bragging about not correcting flaws. Tandy may find it appropriate not to correct the bugs in the Model 100 operating system, but at least they are not bragging about it.

I don't know about the rest of you, but I think these guys missed the point. End users are in the critical path of the computer industry's life cycle. Those who can't figure that out aren't going to get fed. ◀

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# NEW PRODUCTS



## P100 NETWORK FEATURES NEWS CLIPPING SERVICE

**M**embers of P100 Network can take advantage of ITT Dialcom Inc.'s latest expansion ... an on-line electronic news clipping service re-named News-Tab.

The ITT service can be accessed from personal computers, word processors, and computer terminals. The program allows a user to create a personal index of up to 25 key words and phrases. The program then continuously searches the news wires (United Press International and the Associated Press, for example) and automatically deposits stories containing those key words into the user's electronic mailbox.

News-Tab costs \$1 per search-term per day, plus 50 cents for each story clipped. The charges are billed in addition to Dialcom's normal usage rates at \$16.50 per hour prime time and \$12.50 off-peak. Contact ITT Dialcom Inc., 1109 Spring St., Silver Spring, MD 20910, 301-588-1572 for more information.

## RAM SAVING BUILT-IN WITH AUTOPEN PROGRAM

**A** portable word-processing program for the 100 and NEC, Autopen from Chattanooga Systems uses the computers' built-in TEXT program. Only 2.5K RAM space is taken.

Some features include: menu control with defaults; standard pica, elite, and micro formats; and automatic paging and numbering. An extended version also is available for doing form letters, addressing envelopes, and printing labels.

The short version is \$29.50 plus \$2 mailing and handling from Chattanooga Systems Associates, P.O. Box 22261, Chattanooga, TN 37422, 615-892-2339.

## PROTECT YOUR COMPUTER WITH PLASTIC SHELL

**A** plastic cover for the face of the Model 100 is being offered for \$17.95 from The Southworth Co., 3527 Oak Lawn Ave., Suite 113, P.O. Box 191089, Dallas, TX 75219-8089. The cover is designed to protect the 100's keyboard from dust, spills, and other contaminants. The cover is clear so the 100's LCD can be seen while the keyboard is protected. And Southworth says the 100 will fit in its soft case with the plastic cover on it. The cover is made of high-impact Eastman PETG plastic.

## BAR CODE LITERACY WITH LOW-PRICED READER

**W**ith few exceptions, boasts a spokesman for Peripheral Connections, our E-Z-Reader bar code reader can read effectively a wide range of bar code densities, from wide dot-matrix to fine labels. Besides Codabar, it decodes and transmits Code 3 of 9 and Interleaved 2 of 5. E-Z-Reader connects to any computer supporting RS-232C ASCII communications.

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Reader. Dealer and OEM inquiries are welcome: PC Percon, 2190 W. 11th St., Eugene, OR 97402, 503-344-1189.

## BULLETIN BOARD FEATURES FREE ON LINE HELP

**P**ortable Computer Message System is a new 24-hour bulletin board for 100 users. Featuring a monthly newsletter, and public and private electronic mail, interested people are invited to sign on.

To access PCMS, set the 100 to STAT M712E,10 and dial 914-693-0293. Those with questions can either call 914-591-6470 or leave a message on PCMS for Jason Rich, Software Riches, CIS ID 71036,1116.

## UNIQUE GIFTS FOR COMPUTER ENTHUSIASTS

**T**he "Computer Jock" watch/wallet/sweatband is one of a line of gift ideas offered by Sweet Gum Inc. This all-purpose combination watch has an accurate quartz movement with replaceable battery. It retails for \$12.95, plus \$2 for shipping and handling.

Other products by this company are computer related T-shirts, jigsaw puzzles, and a binary clock. Send for a free brochure by writing Sweet Gum, 15490 NW 7th Ave., Miami, FL 33169, or calling 305-687-9338.

Another company featuring various digital clocks is The Advance Collection of Distinct Clock Accents. This company produces desk, calendar, paper clip holder, ruler, and pen stand clocks, to name a few. All can be initialized or done with a special log. Contact Ruth Schechter, 800-521-5220 for further service. ◀



# END USER

PETER STANWYCK



## NO WINNERS IN BATTLE BETWEEN TWO PERSPECTIVES OF THE COMPUTER INDUSTRY

Over the past few months *Portable 100* has been the arena where two perspectives in the computer marketplace, the reviewer and the product vendor, have battled for primacy — and both emerged the loser. This column is going to explore the significance to the end user of this battle.

The two combatants, each in their own way and for their own purpose, emphatically remind end users they're on their own in the computer jungle.

**CRYSTALLINE FOCUS.** In one jarring exchange they bring into crystalline focus both the inadequacy of computer journalism and the immaturity of the computer marketplace.

The review (*Portable 100*, April 1984, page 68) is of a spreadsheet program for the Model 100. Although worthwhile features are referred to by the reviewer, the six-column review was almost empty of any description of them.

The review begins by assuming the reader is "familiar with the conventional functions of an electronic spreadsheet" and focuses on a few specific functions. It hoots a half-dozen places about the program's incessant return to its copyright notice, and concludes it "doesn't measure up to other spreadsheets on the market."

I don't know why it assumes we are familiar with conventional functions, and I can't fathom why it doesn't critically describe those functions. Don't tell me a calculator does great square roots — the last time I had to do a square root was 1960. Tell me how well it adds and subtracts, because I do that every day. The specialized functions are important

and reviewable, but not to the exclusion of the program's primary functions.

**TEMPLATES.** When it comes to spreadsheets, I'm a dummy. I agonize over setting up even the most routine template. The manufacturer of this spreadsheet sells pre-done templates. Those could be very useful to users like myself. The heading refers to them, but the review is silent about them.

No self-respecting statistician would use a pre-done template, but I sure would, and I would like to have known if this manufacturer's were any good.

I can understand the reviewer's frustration with the tedious and redundant return to the copyright notice. I don't understand his tedious and redundant description of it, except perhaps for its value as living theater. Such theatrics however distort the significance of what is a flaw, but only a minor one.

**HORRENDOUS.** Our interest is brought to a fever pitch when the reviewer tells us he uncovered an operational problem which is "...a little short of horrendous." Picking up midway in the description: "...But the second choice is equally incorrect, as it gives you no way to keep B18 in the denominator of each expression while changing the numerator. The replicated formula for cell C6 comes out as +B06/B19,C07 gets +B07/B20, and so on." Sounds pretty horrendous to me.

Unquestionably, the reviewer is way ahead of me when it comes to spreadsheets. I just think his reviews should be addressed to my peers and not his.

Moreover, when a product is declared to be unfavorable by comparison, such a conclusion should be supported by comparisons of specific features of specific programs.

Finally, to be silent on the conventional features, the positive features, and the features of unique interest to end users is to render the review useless to those who need it most.



continued on page 78



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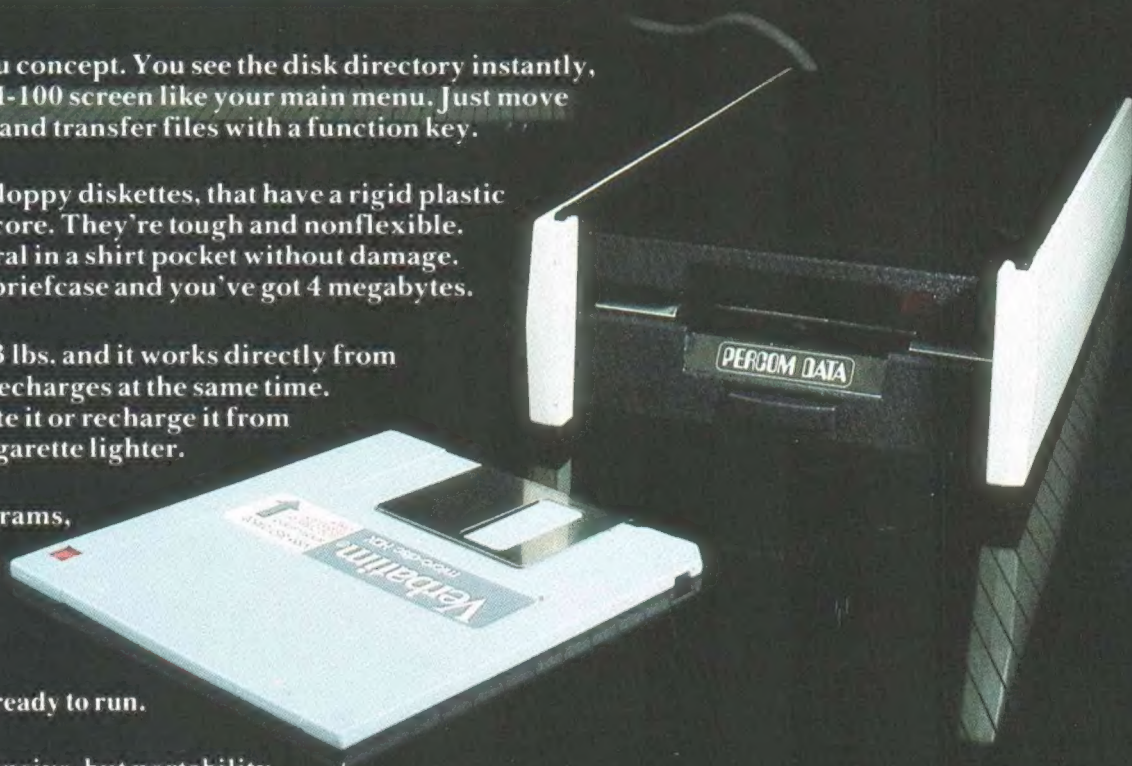
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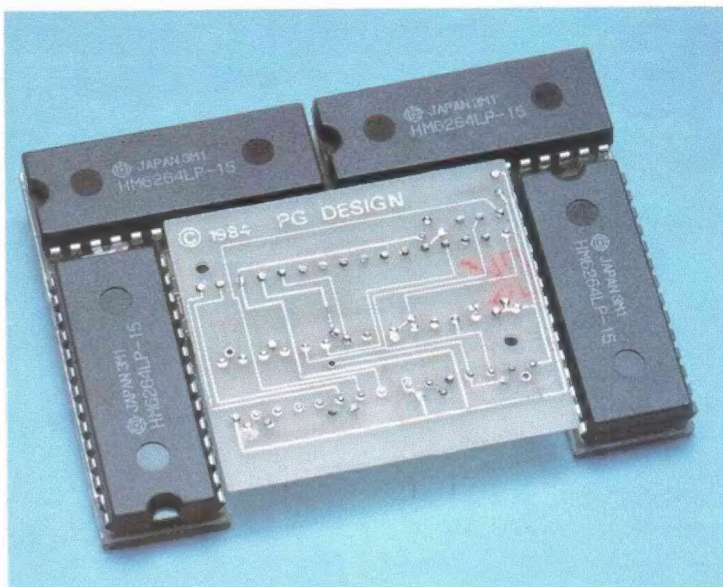
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